

JET

EQUIPMENT & TOOLS

OPERATOR'S MANUAL **BD-920N Belt Drive Bench Lathe**



(shown with optional stand)

JET EQUIPMENT & TOOLS, INC.
A WMH Company
www.jettools.com

P.O. BOX 1349
Auburn, WA 98071-1349
e-mail jet@jettools.com

253-351-6000
Fax 253-939-8001
M-321373 2/02

Important Information

**1-YEAR
LIMITED WARRANTY**

**JET offers a one-year limited
warranty on this product**

REPLACEMENT PARTS

Replacement parts for this tool are available directly from JET Equipment & Tools. To place an order, call 1-800-274-6848. Please have the following information ready:

1. Visa, MasterCard, or Discover Card number
2. Expiration date
3. Part number listed within this manual
4. Shipping address other than a Post Office box.

REPLACEMENT PART WARRANTY

JET Equipment & Tools makes every effort to assure that parts meet high quality and durability standards and warrants to the original retail consumer/purchaser of our parts that each such part(s) to be free from defects in materials and workmanship for a period of thirty (30) days from the date of purchase.

PROOF OF PURCHASE

Please retain your dated sales receipt as proof of purchase to validate the warranty period.

LIMITED TOOL AND EQUIPMENT WARRANTY

JET makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follows: 1 YEAR LIMITED WARRANTY ON THIS JET PRODUCT. Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to a lack of maintenance. JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD SPECIFIED ABOVE FROM THE DATE THE PRODUCT WAS PURCHASED AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. JET SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY OR FOR INCIDENTAL, CONTINGENT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. To take advantage of this warranty, the product or part must be returned for examination, postage prepaid, to an authorized service station designated by our Auburn office. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, JET will either repair or replace the product or refund the purchase price, if we cannot readily and quickly provide a repair or replacement, if you are willing to accept such refund. JET will return repaired product or replacement at JET's expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of JET's warranty, then the user must bear the cost of storing and returning the product. This warranty gives you specific legal rights, and you have other rights, which vary, from state to state.

 **WARNING**

1. Read and understand the entire instruction manual before operating machine.
2. Always wear approved safety glasses/face shields while using this machine.
3. Make certain the machine is properly grounded.
4. Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do NOT wear gloves.
5. Keep the floor around the machine clean and free of scrap material, oil and grease.
6. Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
7. Do NOT over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
8. Make all machine adjustments or maintenance with the machine unplugged from the power source.
9. Use the right tool. Don't force a tool or attachment to do a job which it was not designed for.
10. Replace warning labels if they become obscured or removed.
11. Make certain the motor switch is in the OFF position before connecting the machine to the power supply.
12. Give your work undivided attention. Looking around, carrying on a conversation, and "horse-play" are careless acts that can result in serious injury.
13. Keep visitors a safe distance from the work area.
14. Use recommended accessories; improper accessories may be hazardous.
15. Make a habit of checking to see that keys and adjusting wrenches are removed before turning on the machine.
16. Never attempt any operation or adjustment if the procedure is not understood.
17. Keep fingers away from revolving parts and cutting tools while in operation.
18. Keep belt guard in place and in working order.
19. Never force the cutting action.
20. Do not attempt to adjust or remove tools during operation.
21. Always keep cutters sharp.
22. Always use identical replacement parts when servicing.
23. Failure to comply with all of these warnings may cause serious injury.
22. **WARNING:** Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm.
Some examples of these chemicals are:
 - Lead from lead based paint
 - crystalline silica from bricks and cement and other masonry products, and
 - arsenic and chromium from chemically-treated lumber.
23. Your risk from those exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specifically designed to filter out microscopic particles

Table of Contents

| | |
|---|-------|
| Warnings | 1 |
| Table of Contents | 2 |
| Specifications | 3 |
| Contents of the Shipping Container..... | 3 |
| Set-Up and Preparation for Operation..... | 3 |
| General Description..... | 4-6 |
| Controls | 7 |
| Operation..... | 8-13 |
| Adjustments..... | 14-16 |
| Electrical Connections..... | 16 |
| Lubrication Schedule..... | 17 |
| Parts Lists and Breakdowns..... | 18-41 |
| Wiring Diagram..... | 42 |

CAUTION

The three jaw chuck and the face plate have a set screw on their flanges that secures them to the threaded spindle. Before removing the three jaw chuck or the faceplate, remove the set screw completely from the flange. Failure to remove the set screw may cause damage to the threads on the spindle. When installing either the three jaw chuck or the faceplate, tighten the set screw firmly to prevent the chuck or the faceplate from coming off the spindle during operation.

The specifications in this manual are given as general information and are not binding. JET Equipment and Tools reserves the right to effect, at any time and without prior notice, changes or alterations to parts, fittings, and accessory equipment deemed necessary for any reason whatsoever.

Specifications: BD-920N

Stock No. 321373

Capacities:

Swing Over Bed 9"

Swing Over Cross Slide 5-5/16"

Distance Between Centers 20"

Headstock:

Hole Through Spindle 25/32"

Spindle Nose 1-1/2" x 8 T.P.I.

Taper in Spindle Nose MT-3

Spindle Bearing Type Tapered Roller

Number of Spindle Speeds 6

Range of Spindle Speeds 130-2000 RPM

Gear Box:

Number of Longitudinal Feeds 27

Range of Longitudinal Feeds005"- .011"

Number of Inch Threads 27

Range of Inch Threads 8-56 T.P.I.

Number of Metric Threads 11

Range of Metric Threads05-3.0 mm

Leadscrew 9/16"x16 T.P.I.

Compound and Carriage:

Toolpost Type Single and 4-Way

Maximum Tool Size 1/2" x 1/2"

Maximum Compound Slide Travel 1-7/8"

Maximum Cross Slide Travel 5"

Maximum Carriage Travel 16"

Tailstock:

Tailstock Spindle Travel 1-9/16"

Diameter of Tailstock Spindle 1-1/16"

Taper in Tailstock Spindle MT-2

Miscellaneous:

Steady Rest Capacity 1/4"-1-1/8"

Follow Rest Capacity 1/4"-1-7/8"

Length of Bed 32"

Width of Bed 4-1/2"

Height of Bed 6-5/8"

Overall Dimensions... 37-1/2"Lx19-3/4"Wx15-3/4"H

Main Motor 3/4 HP, 1 Ph., 115V

Net Weight (approx.) 235 lbs.

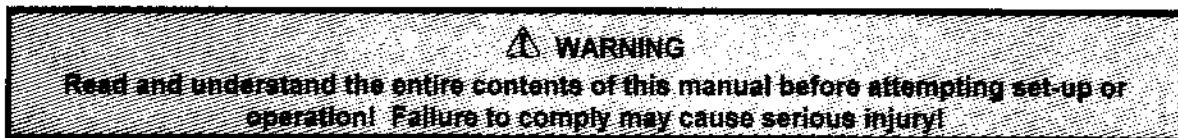
Shipping Weight (approx.) 250 lbs.

Contents of the Shipping Container

- 1 Lathe
- 1 7" Four-Jaw Independent Chuck
- 1 4" Three-Jaw Universal Chuck
- 1 Faceplate
- 1 Four Way Tool Post
- 1 Operator's Manual
- 1 Warranty Card
- 1 Steady Rest
- 1 Follow Rest
- 1 Single Tool Holder
- 3 Chuck Jaws
- 2 Chuck Keys

Toolbox Contents:

- 1 #1 Cross Point Screwdriver
- 1 #1 Flat Blade Screwdriver
- 1 5 pcs. Hex Wrench Set
- 1 8/10mm Open End Wrench
- 1 MT-2 Center
- 1 MT-3 Center
- 1 28T Gear
- 1 30T Gear
- 1 36T Gear
- 1 42T Gear
- 1 45T Gear
- 1 80T Gear

**Set Up and Preparation for Operation**

To avoid twisting the bed, make sure the location to which the lathe is bolted is absolutely flat and level. Place a machinist's level on the bedways and check for level side to side and front to rear. If stand mounted, the stand must be fastened to the floor.

Remove rust protected from all surfaces with kerosene, diesel oil, or a mild solvent. Do not use gasoline, paint thinner, or lacquer thinner. These will damage painted surfaces. After cleaning, wipe with a clean, dry cloth and cover all machined surfaces with a light film of machine oil.

General Description

Lathe Bed

The lathe bed is made of high grade iron. By combining high cheeks with strong cross ribs, a bed of low vibration and rigidity is produced. (Fig. 1) The two precision-ground V-slideways, re-enforced by heat hardening and grinding, are an accurate guide for the carriage and tailstock. The main motor is mounted to the rear of the bed. (Fig. 2)

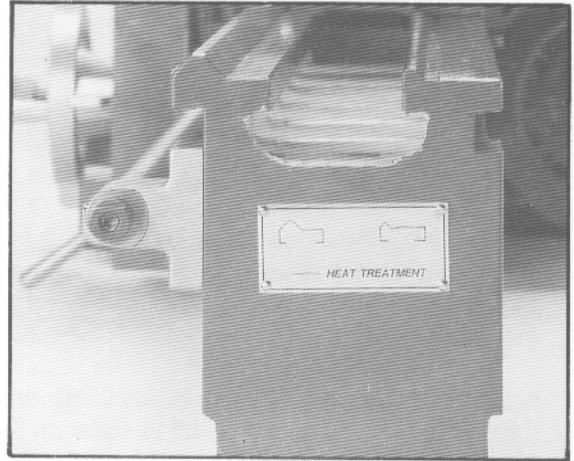


Fig. 1

Headstock

The headstock is cast from high grade, low vibration cast iron. It is bolted to the bed with four screws and uses four adjusting screws for alignment. In the head, the large main spindle is mounted on two precision taper roller bearings. The hollow spindle is a Morse taper No. 3 with a 25/32" bore. (Fig. 3)

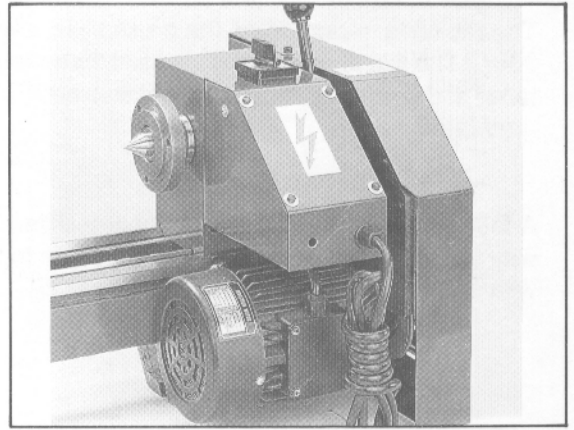


Fig. 2

A quick change of the belt can be accomplished by easing the tension on the idler. (Fig. 4)

To protect the machine against accidental damage, a clutch is fitted to the reduction pulley at the 130 R.P.M. speed.

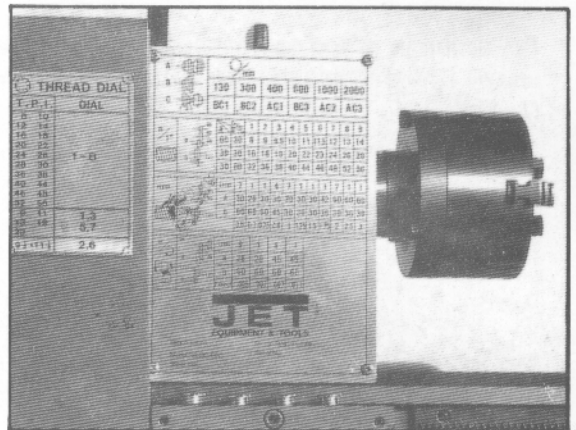


Fig. 3

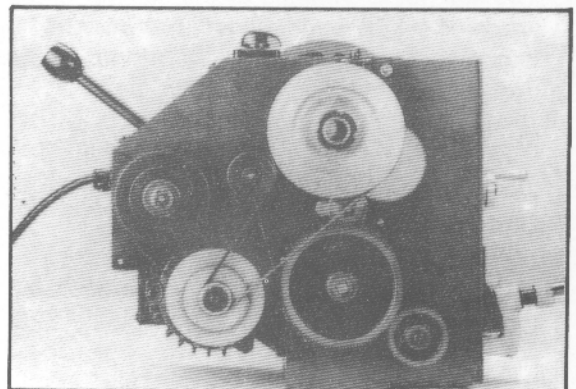


Fig. 4

Carriage

The carriage is made from high quality cast iron. The sliding parts are smooth ground. (Fig. 5) They fit the V on the bed without play. The lower sliding parts can be easily and simply adjusted. The cross slide is mounted on the carriage and moves on a dove tailed slide. Play in the cross slide may be adjusted with the gibs.

Move the cross slide with it's conveniently positioned handwheel. There is a graduated collar on the handwheel. One graduated mark equals 0.0254 millimeters or 0.001 inches. (Fig. 6)

The top slide, mounted on the cross slide, can be rotated 360°. The top slide and the cross slide travel in dove tailed slides and have gibs, adjustable nuts, and graduated collars.

A four way tool post is fitted on the top slide. The four way tool post can be converted to a single tool holder with parts enclosed in the tool box. (Fig. 6)

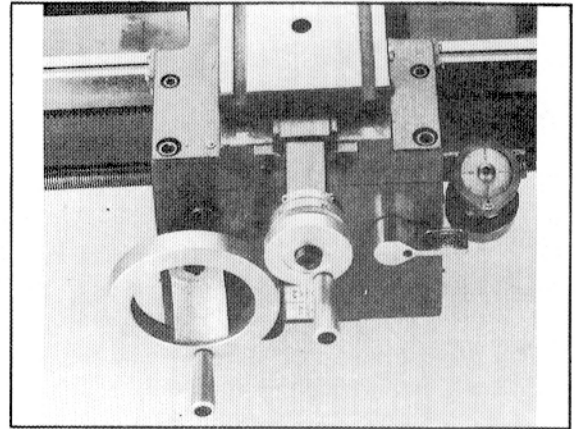


Fig. 5

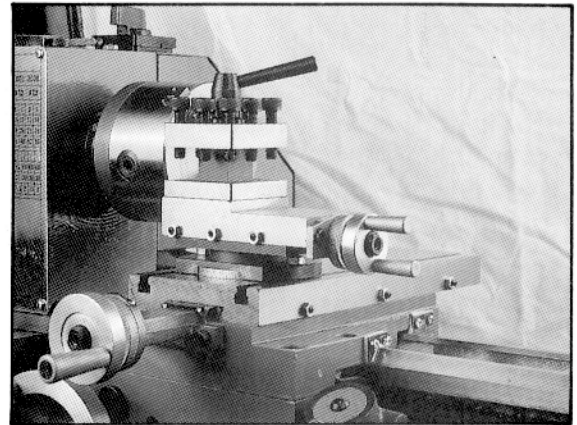


Fig. 6

For accurate facing operations, the carriage can be locked by tightening the hex socket cap screw. (A, Fig. 7)

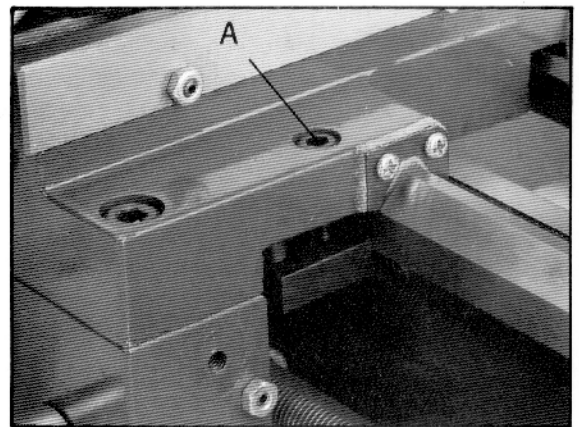


Fig. 7

Apron

The apron is mounted on the bed. A half nut is fitted to the apron. The half nut gibs can be adjusted from the outside.

The half nut is engaged by the half nut lever. A rack, mounted on the bed, and a pinion operated by handwheel on the carriage allow for quick travel of the apron. (Fig. 8)

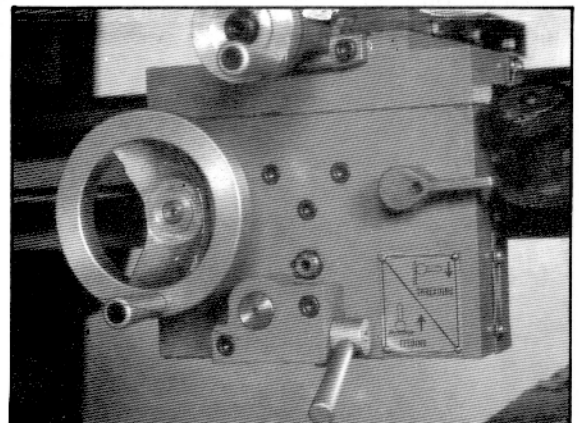


Fig. 8

Tailstock

The tailstock slides on a V way and can be clamped at any location. (Fig. 9) The tailstock has a heavy duty spindle with a Morse taper No. 2 socket and a graduated scale. The spindle can be clamped at any location with a clamping lever. The spindle is moved with a handwheel at the end of the tailstock.

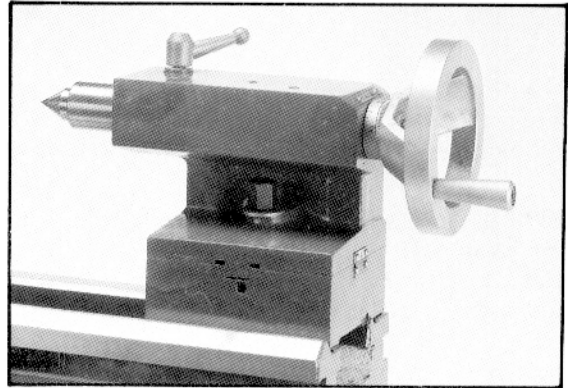


Fig. 9

Leadscrew

The leadscrew is mounted on the front of the machine bed. It is connected to the gear box at the left for automatic feed and is supported by bearing on both ends. The nut and set screw on the right end are designed to take up play on the leadscrew. (Fig. 10)

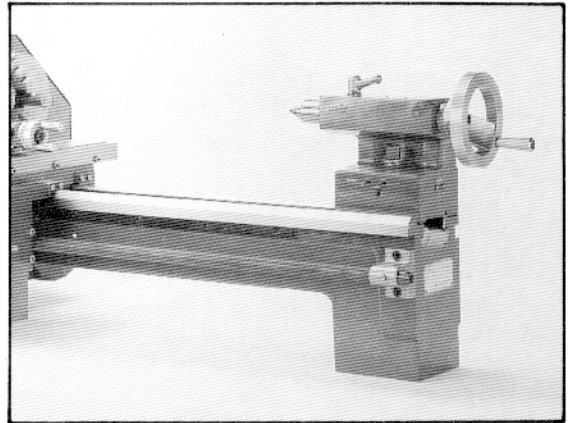


Fig. 10

Gear Box

The gear box is made from high quality cast iron and is mounted on the left side of the machine bed. (Fig. 11) The motor drives through nine changeable speeds. Always raise idler to the disengaged position when changing speeds. (A, Fig. 12)

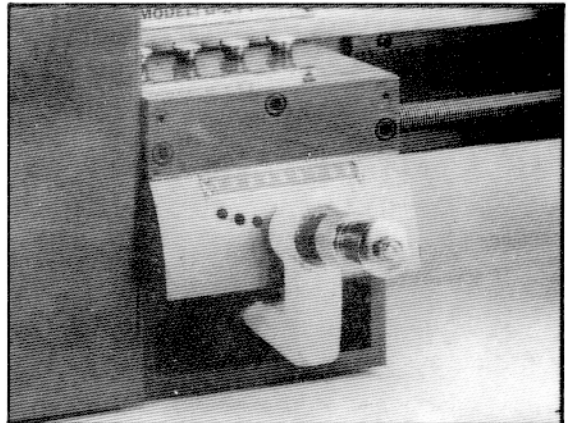


Fig. 11

Drive and Electrical Equipment

The main drive is provided by a single phase, A.C. motor mounted on the rear of the lathe bed. (B, Fig. 12) The forward-reverse switch (C, Fig. 12) is mounted on the top of the electric box. The motor condenser is also contained in this box.

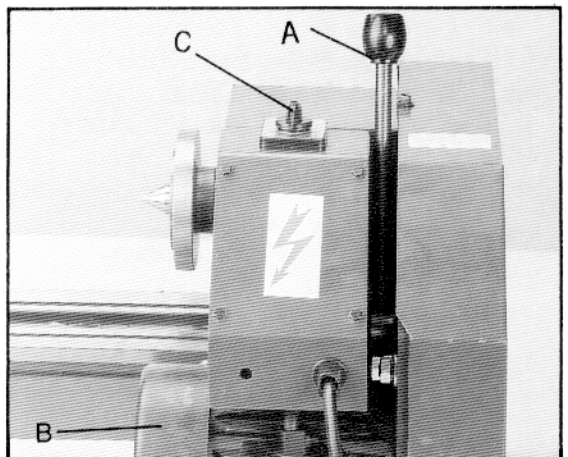
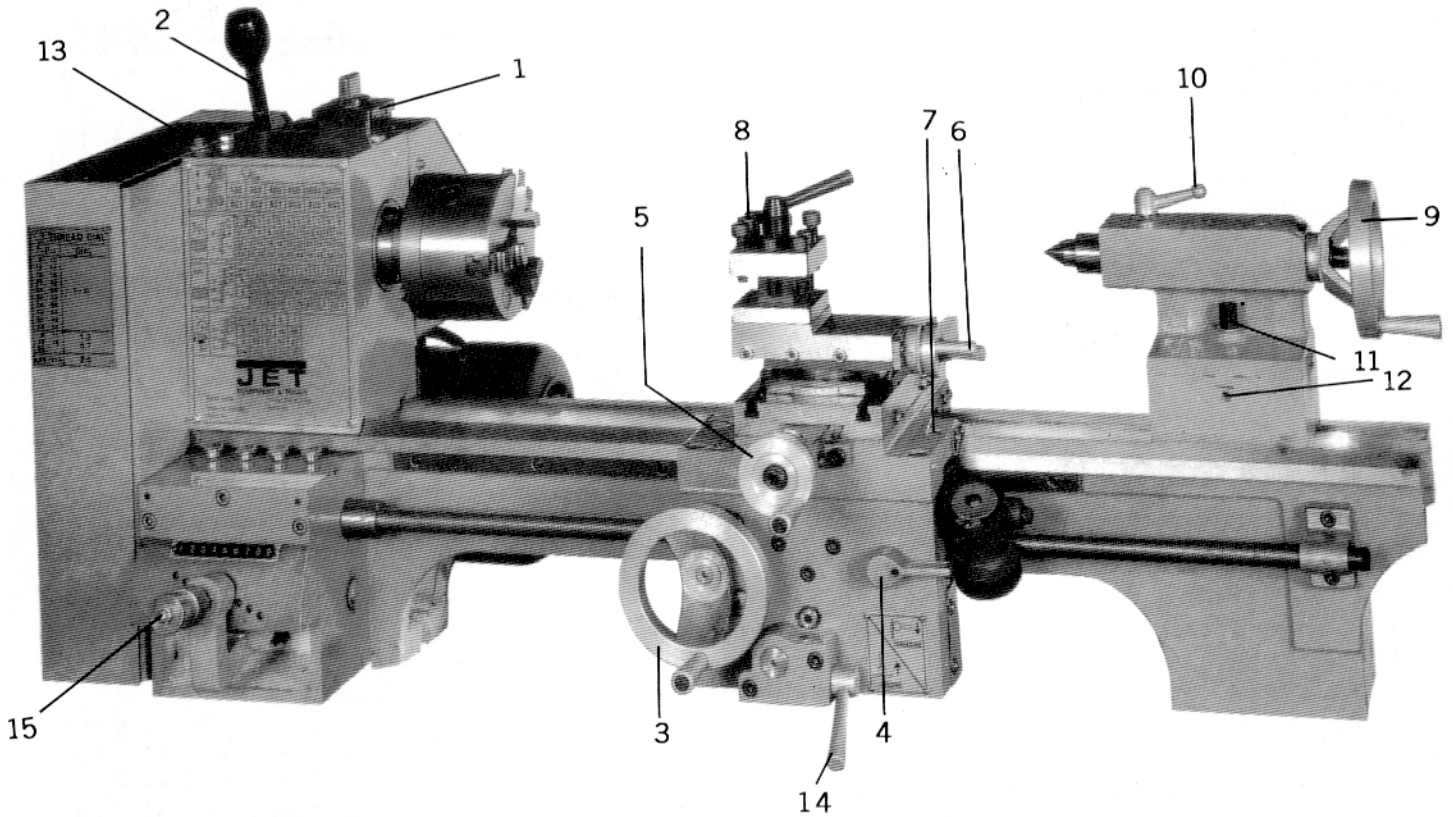


Fig. 12

Controls



1. Forward/Reverse Switch
2. V-Belt Tension Lever
3. Longitudinal Travel Handwheel
4. Half-Nut Lever
5. Cross Slide Handwheel
6. Top Slide Handwheel
7. Longitudinal Lock Screw
8. Tool Post

9. Tailstock Spindle Handwheel
10. Tailstock Spindle Clamping Lever
11. Tailstock Locking Screw
12. Tailstock Off-Set Adjustment
13. End Gear Cover Lock Screw
14. Automatic Feed Lever
15. Gear Box Quick Change Lever

Operation

Tool Set-Up

The cutting angle is correct when the cutting edge is in line with the center axis of the work piece. The correct height of the tool can be achieved by comparing the tool point with the point of the center mounted in the tailstock. The correct tool height can be obtained by using shims under the tool. (Fig. 13)

When turning, the tool has a tendency to bend under pressure. For best results, tool overhang should be kept to a minimum of 3/8" or less.

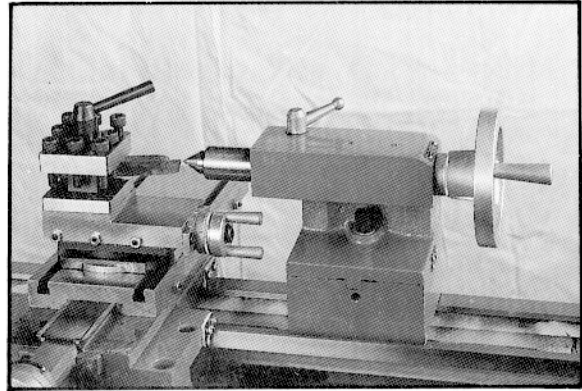


Fig. 13

Manual Turning

Apron travel, cross travel, and top slide handwheels can be operated for longitudinal or cross feeding. (Fig. 14)

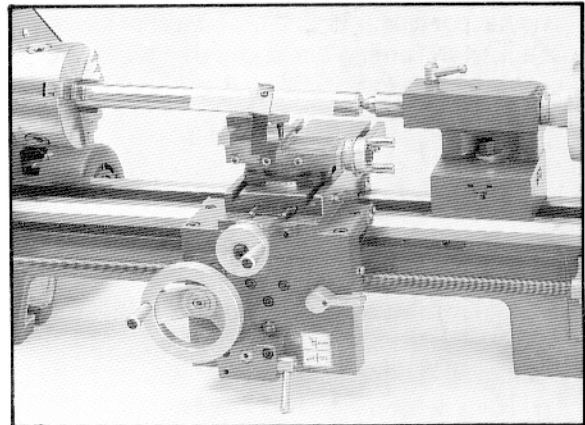


Fig. 14

Longitudinal Turning with Auto-Feed

Three automatic feeds are available. (Fast = 0.011"/rev., medium = 0.007"/rev., slow = 0.005"/rev.) These can be set by altering the gear wheel combinations. (See table - Fig. 15)

| | | | | | | |
|--|-----|-------|------|------|------|------|
| | 40 | Lever | 9 | 1 | 9 | 1 |
| | 80 | a | 28 | 28 | 45 | 45 |
| | 40 | b | 60 | 60 | 60 | 60 |
| | 127 | Feed | .005 | .007 | .007 | .011 |

Fig. 15

By moving lever (A, Fig. 16) upward, the automatic feed is engaged.

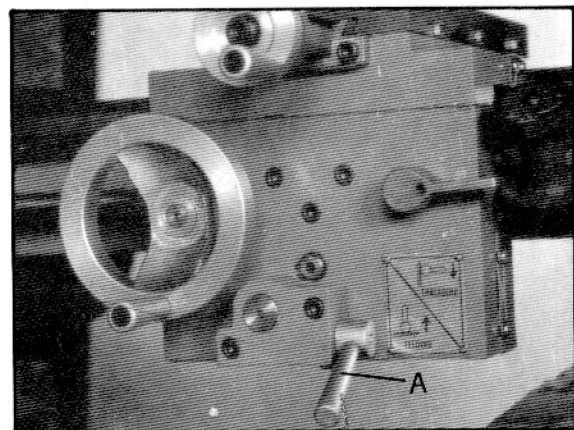


Fig. 16

Taper Turning Using Tailstock Off-Set

Work to a side angle of 5° can be turned by off-setting the tailstock. The angle depends on the length of the workpiece. (Fig. 17)

To off-set the tailstock, loosen locking screw (1, Fig. 17). Loosen the front adjusting screw (2) and take up the same amount by tightening the rear adjusting screw (3) until the desired taper has been reached. Tighten the front screw to lock the tailstock in position. The workpiece must be held between two centers and driven by a face plate and driver dog.

After taper turning, the tailstock should be returned to its original position. The zero position of the tailstock is checked by turning a test piece with constant adjustment until the piece is absolutely true.

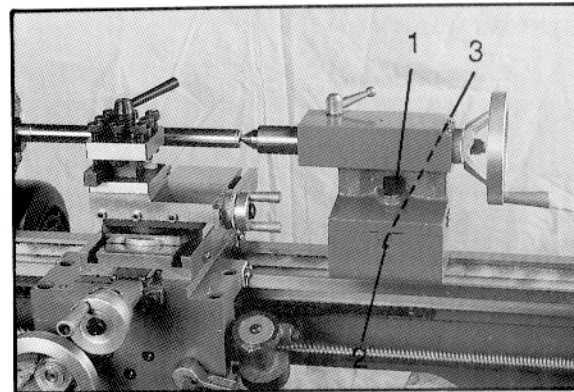


Fig. 17

Taper Turning by Setting the Top Slide

By angling the top slide, tapers may be turned. (Fig. 18)

To rotate the top slide:

Loosen two screws (1, Fig. 18), top slide can then be rotated. A graduated scale permits accurate adjustment of the top slide. This method can only be used for short tapers.

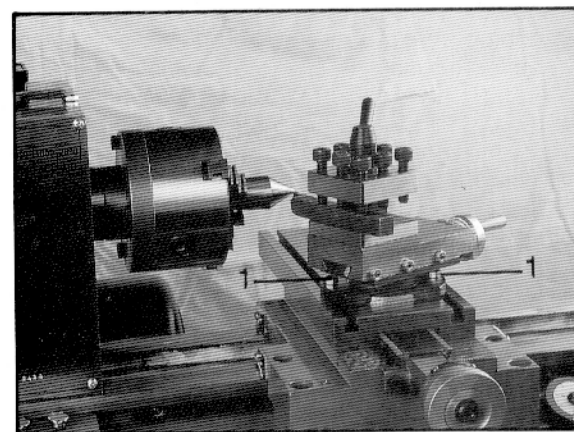


Fig. 18

Turning Between Centers

For turning between centers, it is necessary to remove the chuck from the spindle. Fit the MT-3 center into the spindle nose and the MT-2 center into the tailstock. Mount the workpiece fitted with the driver dog between the centers. The driver is driven by a catch plate or face plate. (Fig. 19)

Note: Always use a small amount of grease on the tailstock center to prevent center tip from overheating.

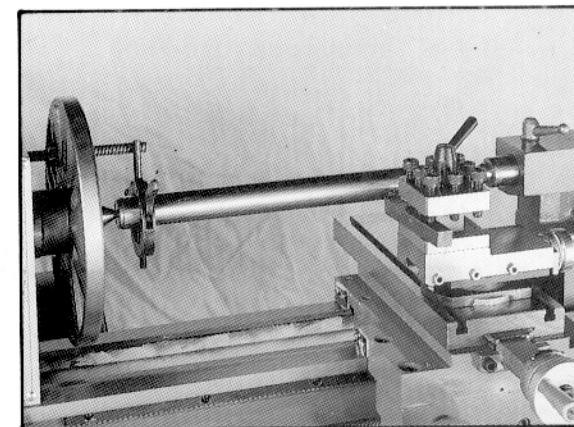


Fig. 19

Thread Cutting

As indicated on the threading charts below, several different threads can be cut using the proper combination of gears and settings. When cutting inch threads, the half nut and threading dial (figures 20 and 21) are used to thread in a conventional manner. The thread dial charts specifies at which point a thread can be entered using the threading dial.

Metric Thread Cutting

The only difference in metric thread cutting is the half nut must be engaged during the entire threading process. The thread dial cannot be utilized.

Set the machine up for the desired thread pitch (according to the metric threading chart below). Start the machine and engage the half nut. When the tool reaches the part, it will cut the initial threading pass. When the tool reaches the end of the cut, stop the machine by turning the motor off and at the same time back the tool out of the part so that it clears the thread. Do not disengage the half nut lever. Reverse the motor direction to allow the cutting tool to traverse back to the starting point. Repeat these steps until you have obtained the desired results.

Example of Gear Set-Up to Cut 10 T.P.I. (Fig. 22)

According to the chart. The gear pattern should be set up 40-80-40, (a)60-127-(b)30. Depending on the gear pattern your currently using these instructions may vary.

- Loosen hex socket cap screw (1) with a 5mm wrench.
- Unscrew hex socket cap screw (2). Remove washer's (3) and gear (4). Also, remove the bushing that is located behind the gear.
- Loosen square nut (7) to allow movement in the center gear position.
- Loosen square nut (5) and unscrew shaft.
- Loosen set screw on the bushing, and slide the bushing off of the shaft.
- Remove the gears. Place the 60-tooth gear (6) facing out on the shaft. Follow with the 40-tooth gear.
- Replace the bushing and tighten the set screw.
- Re-install the shaft. Tighten square nut (5). Make sure that 40-tooth gear lines up with plastic gear (8).
- Place 30-tooth gear in position (4). Place the bushing on the shaft and tighten with washer's (3) and socket head cap screw (2).
- 127-tooth gear should mesh with upper and lower gears. Tighten square nut (7).
- You should allow for a little backlash in the gears. They should not be so close and so tight that they do not spin smoothly.

Slip Clutch

To avoid overloading the drive, a safety slip clutch is fitted in the 130 rpm position. Overloading the drive (rattling noise) means the depth of cut is too deep and should be reduced.

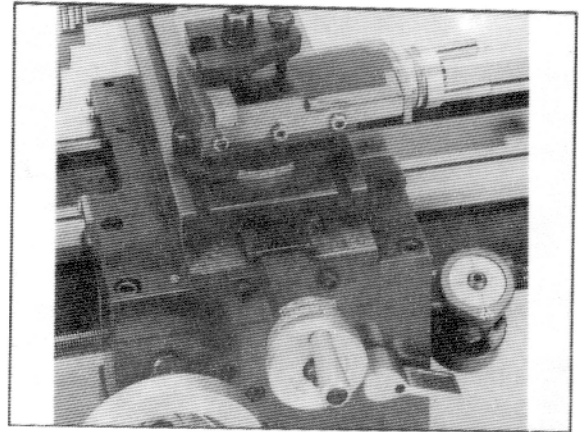


Fig. 20

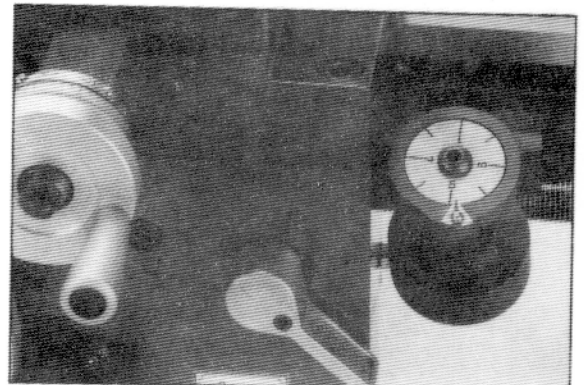


Fig. 21

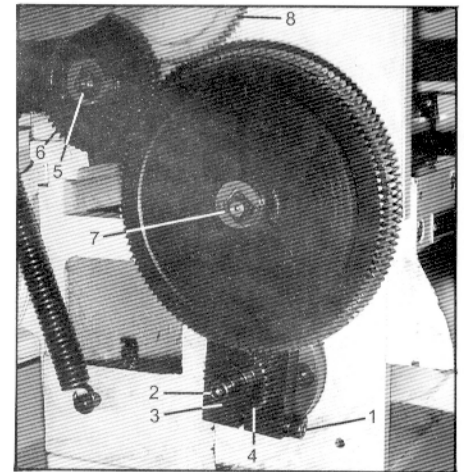


Fig. 22

| INCH | | Lever | | | | | | | | | | THREAD DIAL | | | | |
|--------|------|-------|-----|-----|------|-----|----|------|-----|------|------|-------------|----|----|--------|------|
| T.P.I. | DIAL | a | | b | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | T.P.I. | DIAL |
| | | 8 | 10 | 60 | 30 | 8 | 9 | 9.5 | 10 | 11 | 11.5 | 12 | 13 | 14 | | |
| 12 | 14 | 30 | 30 | 16 | 18 | 19 | 20 | 22 | 23 | 24 | 26 | 28 | | | | |
| 16 | 18 | 30 | 60 | 32 | 36 | 38 | 40 | 44 | 46 | 48 | 52 | 56 | | | | |
| 20 | 22 | | | | | | | | | | | | | | | |
| 24 | 26 | | | | | | | | | | | | | | | |
| 28 | 30 | | | | | | | | | | | | | | | |
| 36 | 36 | | | | | | | | | | | | | | | |
| 40 | 44 | | | | | | | | | | | | | | | |
| 46 | 48 | | | | | | | | | | | | | | | |
| 52 | 56 | | | | | | | | | | | | | | | |
| 9 | 11 | a | 30 | 28 | 30 | 30 | 30 | 30 | 30 | 42 | 60 | 60 | 60 | | 1.3 | |
| 13 | 19 | b | 60 | 60 | 60 | 45 | 30 | 36 | 30 | 36 | 30 | 36 | 30 | | 5.7 | |
| 25 | 25 | | 0.5 | 0.7 | 0.75 | 0.8 | 1 | 1.25 | 1.5 | 1.75 | 2 | 2.5 | 3 | | 2.6 | |
| 2 | 1/2 | | | | | | | | | | | | | | | |

Lathe Accessories

Three Jaw Universal Lathe Chuck

Using this universal chuck, round, triangular, square, hexagonal, octagonal, and twelve-cornered stock may be clamped. (Fig. 23)

Note: new lathes have very tight fitting jaws. This is necessary to ensure accurate clamping and long service life. With repeated opening and closing, the jaws adjust automatically and their operation becomes progressively smoother.

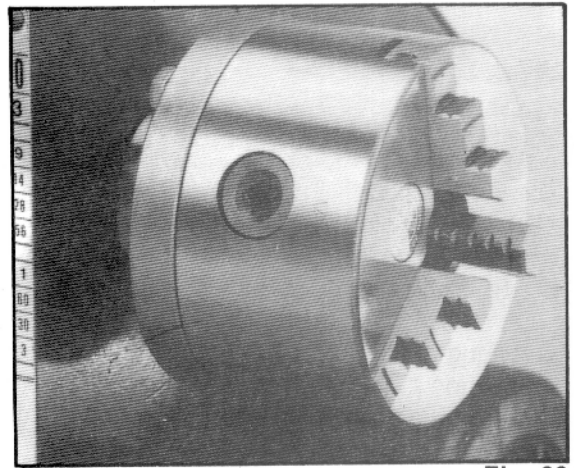


Fig. 23

Four Jaw Independent Lathe Chuck

This special chuck has four independently adjustable chuck jaws. These permit the holding of asymmetrical pieces and enable the accurate set-up of cylindrical pieces. (Fig. 24)

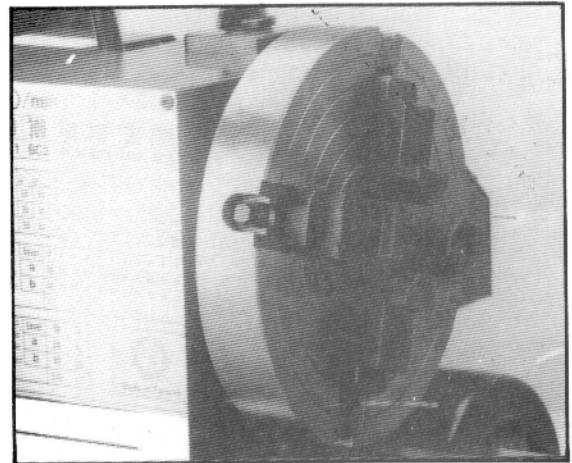


Fig. 24

Drill Chuck (Optional)

Use the drill chuck to hold centering drills and twist drills in the tailstock. (Fig. 25)

Morse Taper Arbor (Optional)

An arbor is necessary for mounting the drill chuck in the tailstock. It has a No. 2 Morse taper. (Fig. 25)

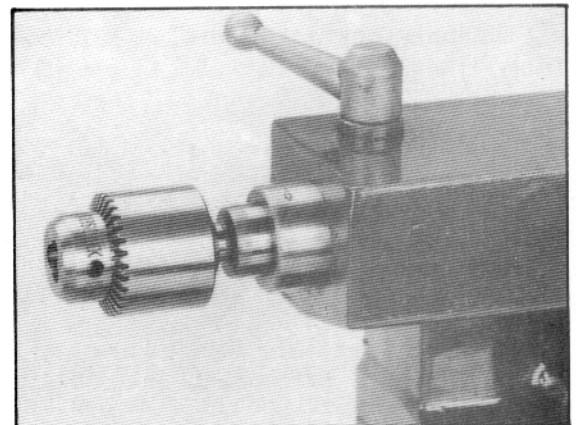


Fig. 25

Live Center (Optional)

The live center is mounted in ball bearings. Its use is highly recommended for turning at speeds in excess of 600 RPM. (Fig. 26)

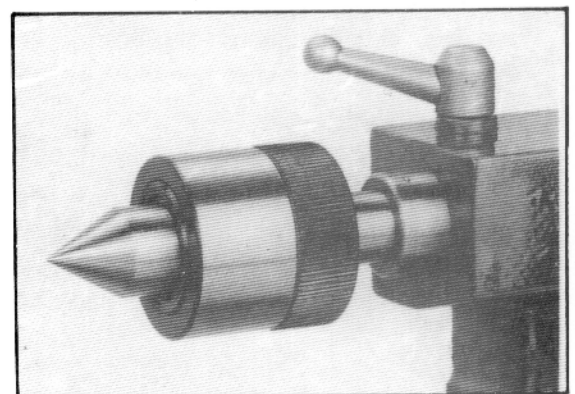


Fig. 26

Steady Rest

The steady rest serves as a support for shafts on the free tailstock end. For many operations, the tailstock cannot be used as it obstructs the turning tool or drilling tool, and therefore, must be removed from the machine. The steady rest, which functions as an end support, ensures chatter-free operation. The steady rest is mounted on the bedways and is secured from below with a locking plate. The sliding fingers require continuous lubrication at the contact points to prevent premature wear. (Fig. 27)

Setting the Steady Rest

1. Loosen three hex nuts (1, Fig. 28)
2. Loosen knurled screw (3, Fig. 28) and open the sliding fingers (2, Fig. 28) until the steady rest can be moved with its fingers around the workpiece. secure the steady rest in position.
3. Tighten knurled screws so that fingers are snug but not tight against the workpiece. Tighten three nuts (1, Fig. 28). Lubricate the sliding points with machine oil.
4. When, after prolonged operation, the jaws show wear, the tips of the fingers may be filed or remilled.

Follow Rest

The follow rest is mounted on the saddle and follows the movement of the turning tool. Only two sliding fingers are required. The place of the third finger is taken by the turning tool. The follow rest is used for turning operations on long, slender workpieces. It prevents flexing of the workpiece under pressure from the turning tool. (Fig. 29)

Set the fingers snug to the workpiece but not overly tight. Lubricate the fingers during operation to prevent premature wear.

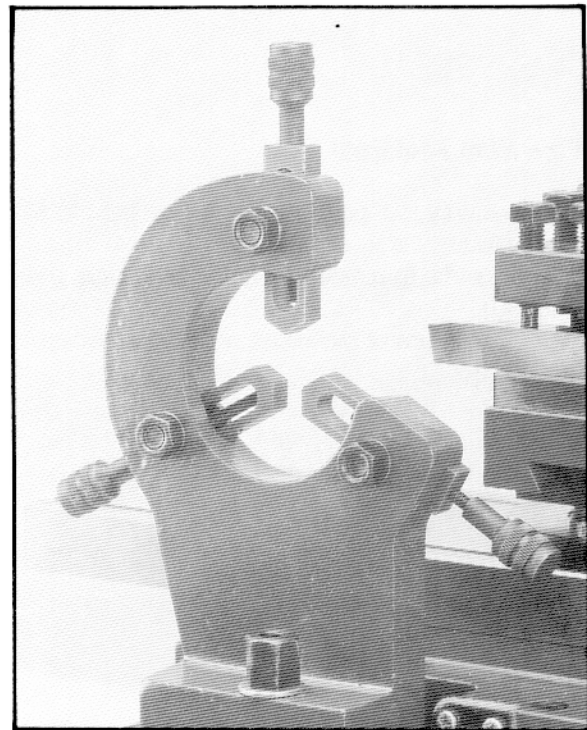


Fig. 27

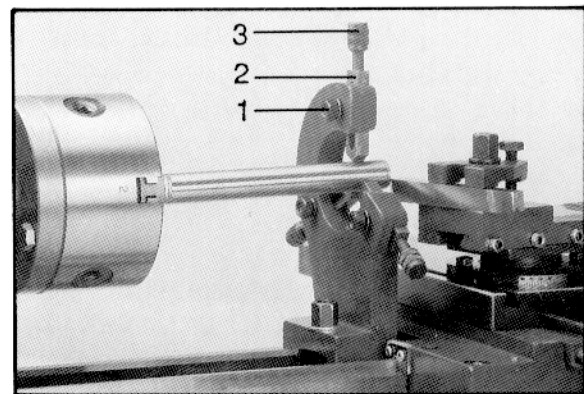


Fig. 28

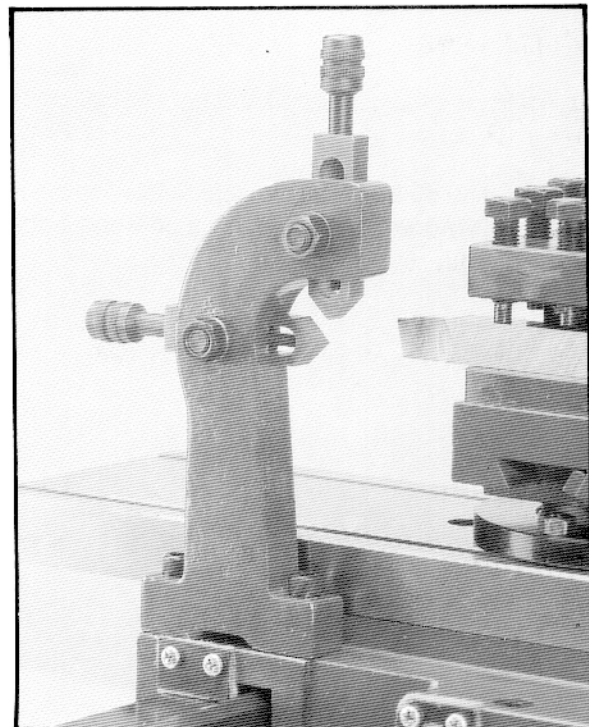


Fig. 29

Four Way Tool Post

The four way tool post is mounted on the top slide and allows four tools to be clamped. Loosen the center clamp handle to rotate any of the four tools into position. (Fig. 30)

Use a minimum of two clamping screws when installing a cutting tool.

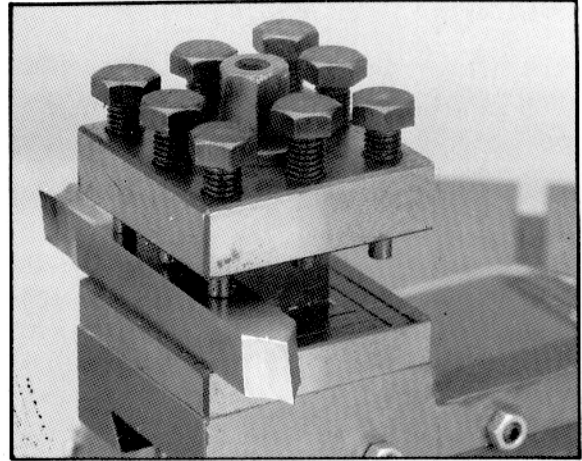


Fig. 30

Change Gears

There are six gears with different number of teeth (28,30, 36, 42, 45, and 80). They can be combined for different speeds and feeds as required. See chart on headstock. (Fig. 31)

Note: The 80 tooth plastic gear is fitted to the machine as a safety gear. Replace with a new one if damaged.

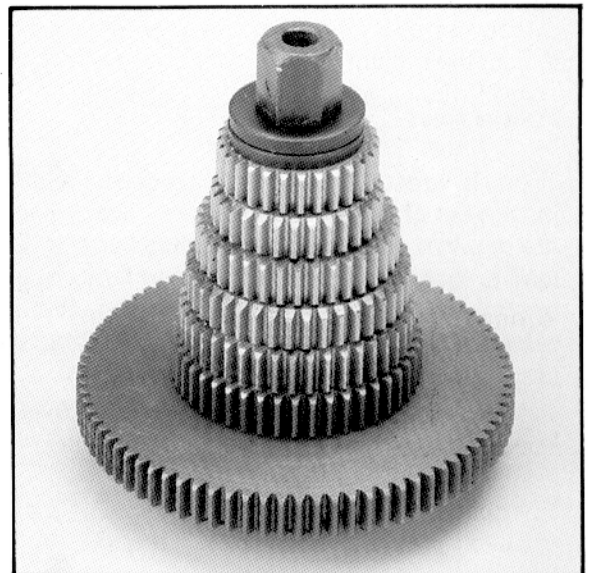


Fig. 31

Bearings and Slide Adjustment

Adjustment of the Main spindle Bearings

The main spindle bearings are adjusted at the factory. If end play becomes evident after considerable use, the bearings may be adjusted.

Loosen set screw (1, Fig. 32) in the slotted nut (2, Fig. 32) on the back of the spindle. Tighten slotted nut until all end play is taken up. The spindle should still revolve freely. Caution: excessive tightening or preloading will damaged the bearings. Tighten set screw (1, Fig. 32)

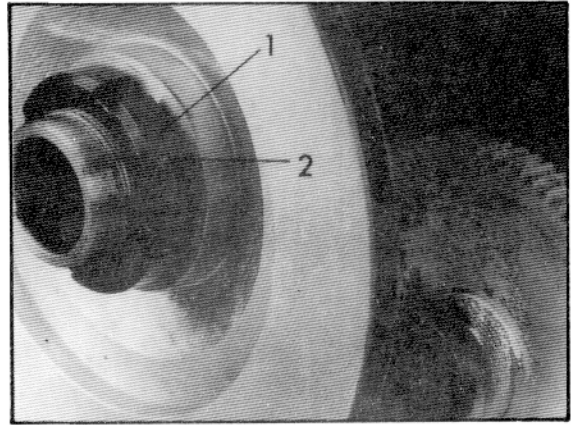


Fig. 32

Adjustment of Cross and Top Slide

Each slide is fitted with a gib strip and can be adjusted with screws (1, Fig. 33) fitted with lock nuts (2, Fig. 33). Loosen the lock nuts and tighten the set screws until slide moves freely without play. Tighten lock nuts to retain adjustment.

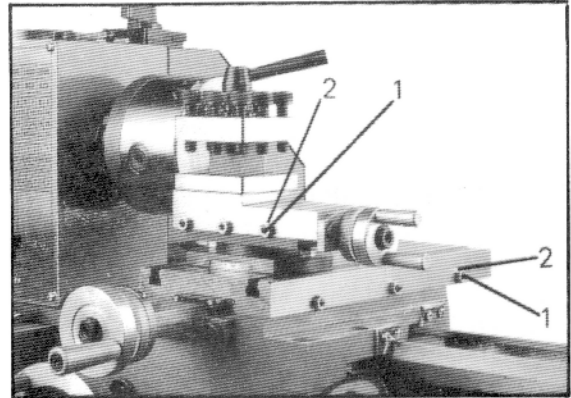


Fig. 33

Adjustment of Compound Feed Screw End Float

To adjust the slides on the saddle:
Loosen screw (1, Fig. 34) and lock nut (2, Fig. 34).
Adjust the nut until all play has been taken up. Lock the nut (2) with the screw (1).

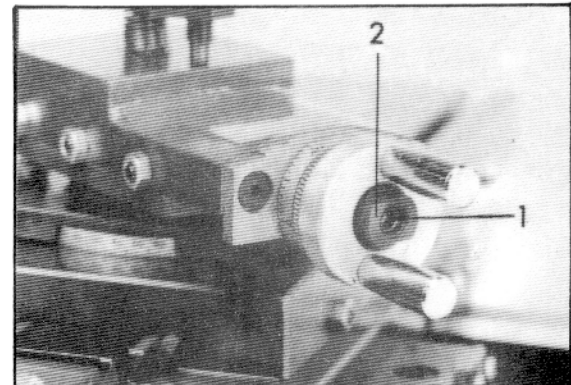


Fig. 34

Cross Slide Screw

Remove the compound slide (Fig. 35) and adjust screw (1, Fig. 35) until the backlash between the spindle and the nut is eliminated.

For operator convenience, the compound may be located in two positions on the cross slide.

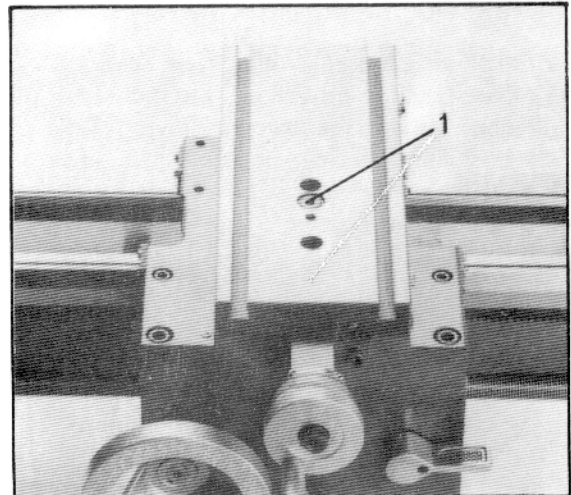


Fig. 35

Compound Slide Spindle Backlash Adjustment

Remove two screws holding the spindle bracket in position and unscrew the spindle. Adjust the screw ring (1, Fig. 36) until all backlash has been eliminated.

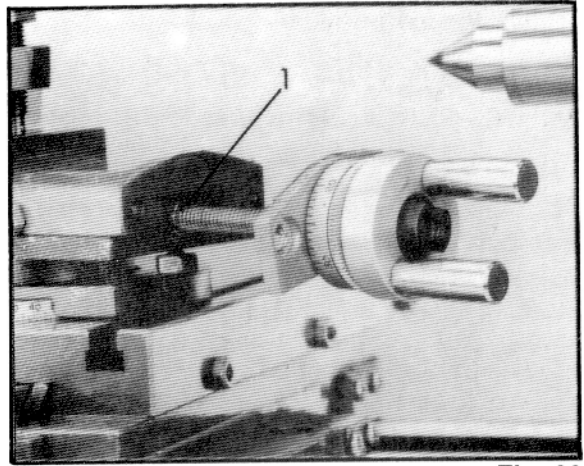


Fig. 36

Adjustment of Half-Nut Guide

Loosen two nuts (1, Fig. 37) on the right side of the apron and adjust the control screws (2, Fig. 37) until both half nuts move freely without play. Tighten both nuts.

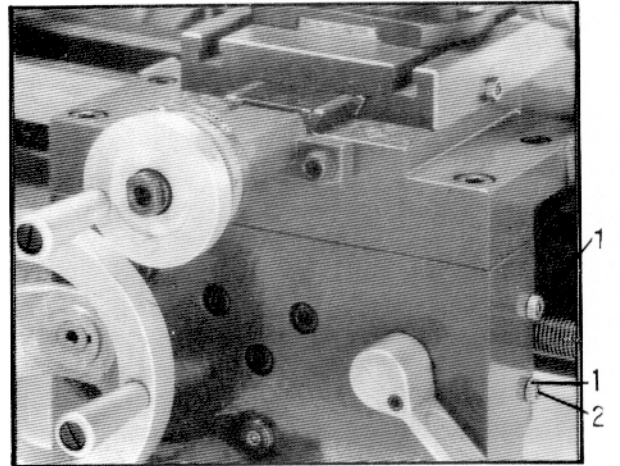


Fig. 37

Replacing the Shear Pin in the Leadscrew

If the shear pin breaks, it must be replaced. (Fig. 38) To knock out the broken pin, the hex head screw must be loosened and the pin removed. Take off the sleeve and remove the broken pin from the sleeve and the leadscrew. Replace the sleeve, line up the holes, fit the new pin, and assemble.

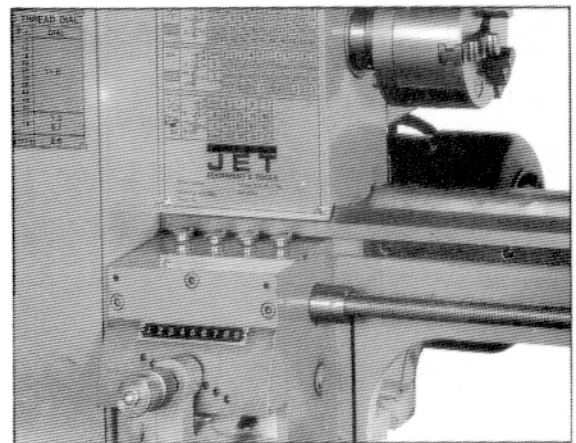


Fig. 38

Replacing the V-Belt

Loosen the screw on the top of the headstock and open the cover. (Fig. 39)

Remove tension on the V-belt by pulling handle toward front of the machine. (Fig. 39) Remove belt from the pulleys and replace with new belt. Move lever toward motor to tension belt. (Fig. 40) Close cover and secure with screw.

Caution: to avoid breaking the belt, move the tension lever towards the front of the machine before starting. (Fig. 41)

Electrical Connections

The BD-920N Bench Lathe is rated at 3/4 HP, 1 Ph., 60 HZ, 115V only. Confirm the power at the location is the same as the rating of the lathe before plugging the lathe in. Do not attempt to run this lathe on any other type of power.

The lathe must be properly grounded. The lathe is designed to be used with an outlet as in Fig. 42. If this type of outlet is not readily available, an adapter (as in Fig. 43) may be used temporarily until a qualified electrician can install a grounded outlet. Make sure the grounding tab on the adapter is secured to the cover plate screw.

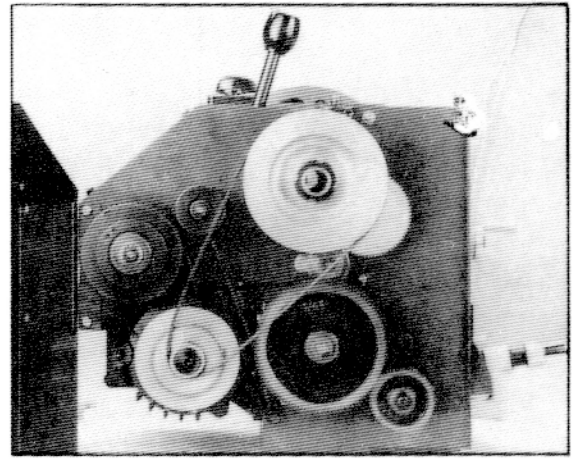


Fig. 39

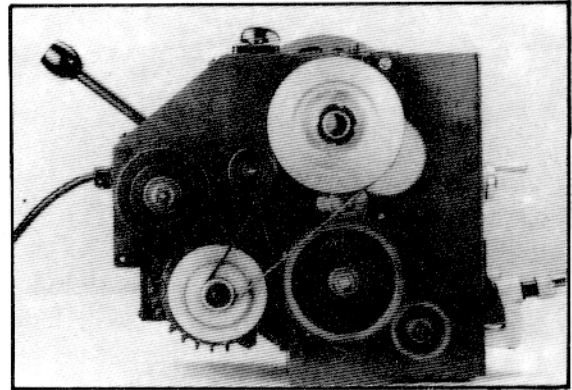


Fig. 40

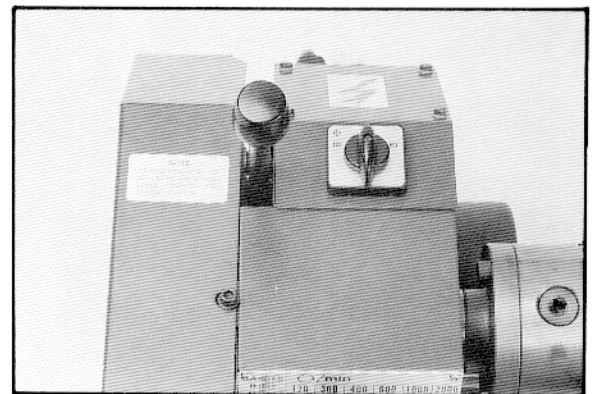


Fig. 41

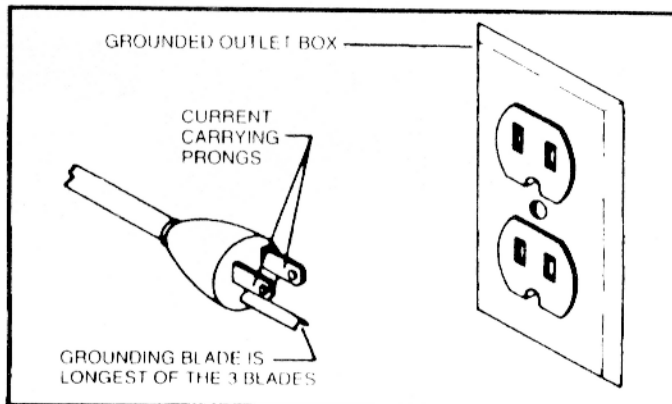


Fig. 42 16

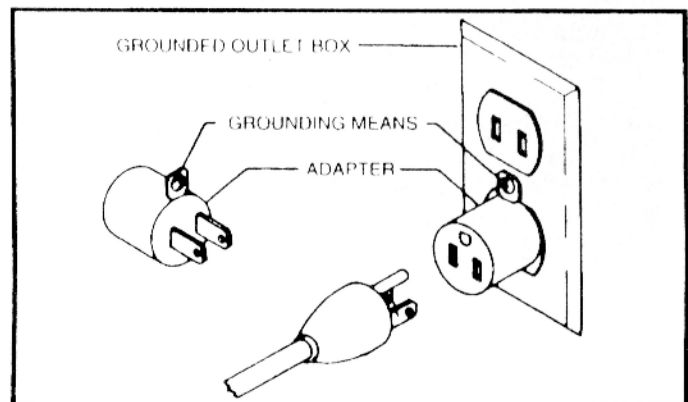
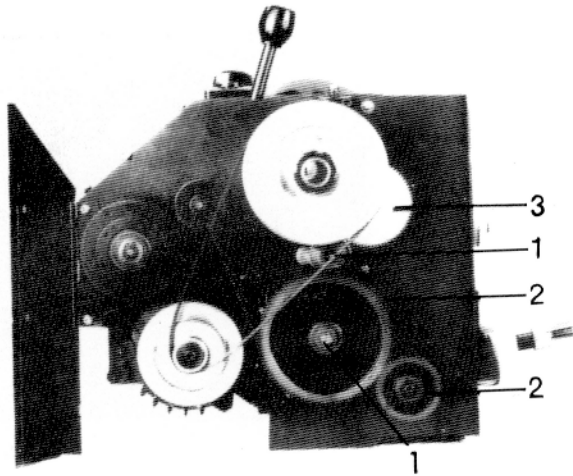


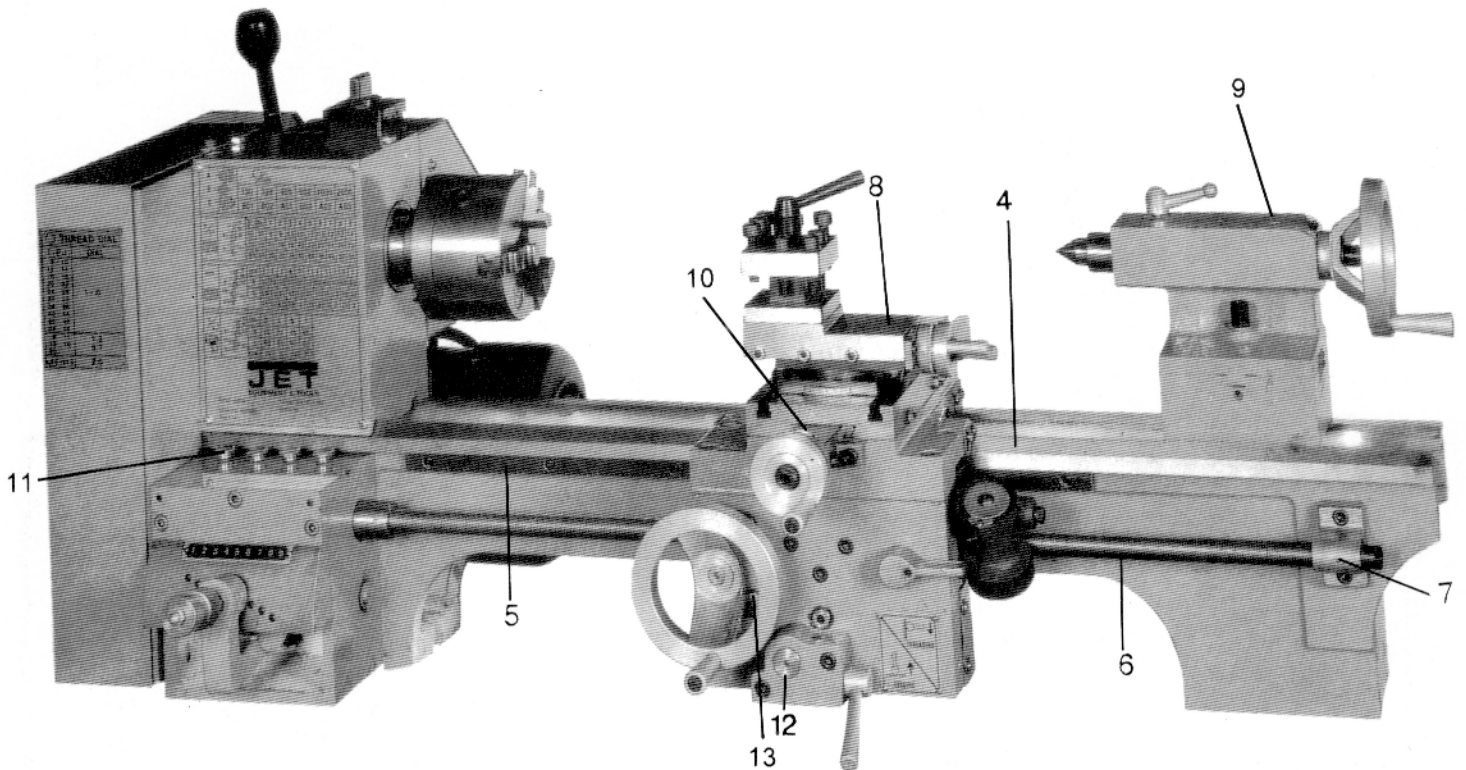
Fig. 43

Lubrication Schedule

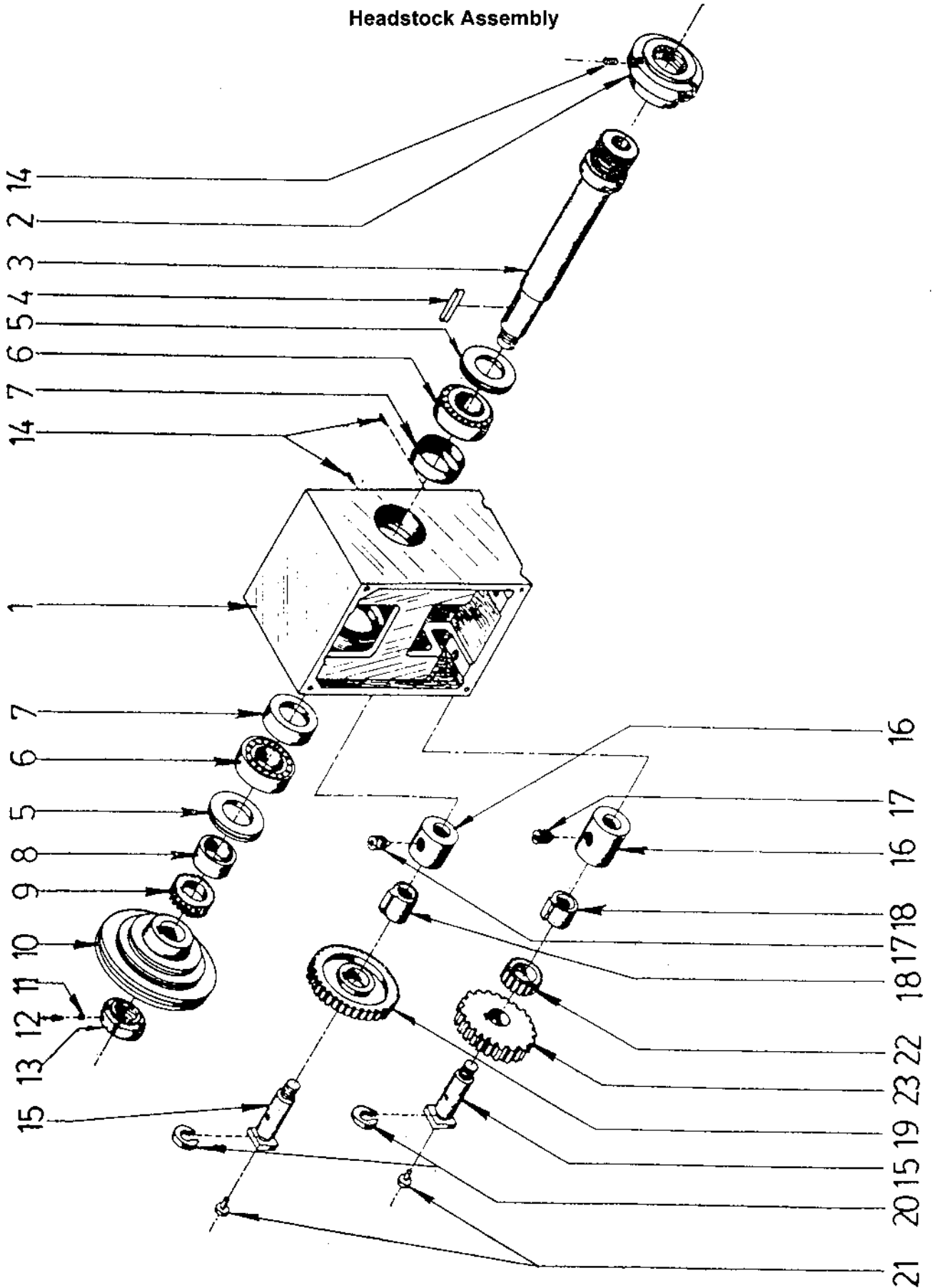
Note: lubricate all locations daily.
Grease refers to #2 tube grease.
Oil refers to 20W machine oil.



1. 1-2 squirts oil into oil ball on gear hub.
2. Grease teeth of feed and change gears.
1-2 squirts oil into oil ball on gear hub.
3. Lightly coat gear teeth with oil.
1-2 squirts oil into oil ball on gear hub.
4. Wipe bedways clean and coat lightly with oil.
5. Grease rack over complete length.
6. Clean and oil leadscrew over complete length.
7. 1-2 squirts oil into oil ball on leadscrew bracket.
8. Lightly coat screw and guides of top slide with oil.
9. 1-2 squirts oil into oil ball on top of tailstock body.
10. 1-2 squirts oil into oil ball on top of carriage.
11. 1-2 squirts oil into four oil reservoirs on gear box.
12. 1-2 squirts oil into hub for feed lever.
13. 1-2 squirts oil into two oil balls on apron front.



Headstock Assembly

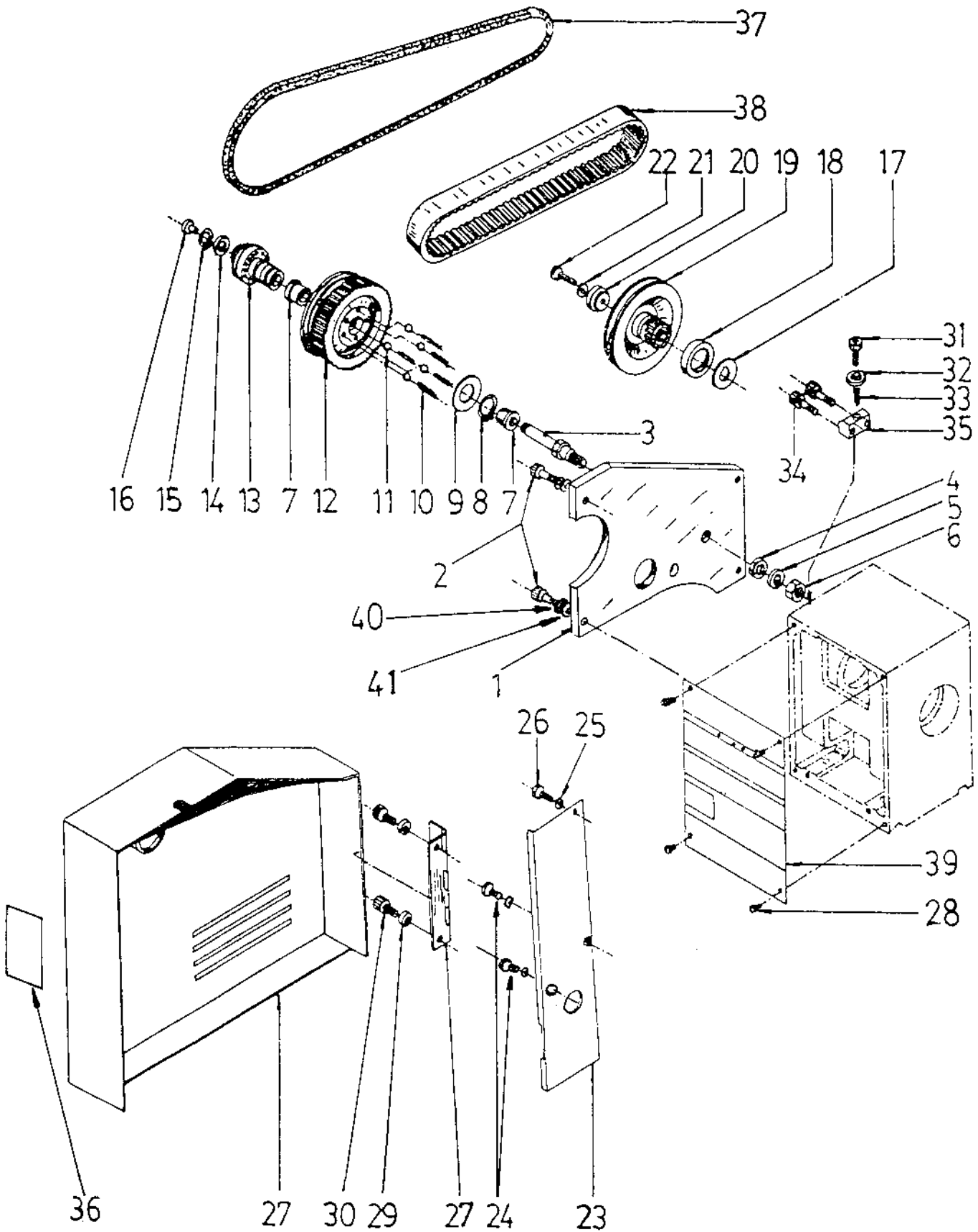


Parts List for the BD-920N Bench Lathe

Headstock Assembly

| Index No. | Part No. | Description | Size | Qty. |
|-----------|-------------|-------------------|-------|------|
| 1 | 1002 | Headstock Casting | | 1 |
| 2 | 1006 | Flange Joint | | 1 |
| 3 | 1004 | Spindle | | 1 |
| 4 | BD920N-H04 | Key | | 1 |
| 5 | 1005 | Gasket | | 2 |
| 6 | BD920N-H06 | Ball Bearing | | 2 |
| 7 | 1003 | Cover | | 2 |
| 8 | 1007 | Spacing Ring | | 1 |
| 9 | 1011 | Gear | 40T | 1 |
| 10 | 1008 | Pulley | | 1 |
| 11 | 1010 | Bushing | | 1 |
| 12 | TS-1523031 | Set Screw | M6x10 | 4 |
| 13 | 1012 | Nut | M28 | 1 |
| 14 | TS-1523031 | Set Screw | M6x10 | 3 |
| 15 | 1017 | Shaft | | 2 |
| 16 | 1015 | Spacing Ring | | 2 |
| 17 | TS-1522011 | Set Screw | M5x6 | 2 |
| 18 | 1016 | Bushing | | 2 |
| 19 | 1014 | Gear (plastic) | 80T | 1 |
| 20 | 1013 | Washer | | 2 |
| 21 | BD920N-H21 | Oil Port | | 2 |
| 22 | 1018 | Gear | 40T | 1 |
| 23 | 1019 | Gear | 30T | 1 |
| | BD920N-TBCP | Tool Box Complete | | |

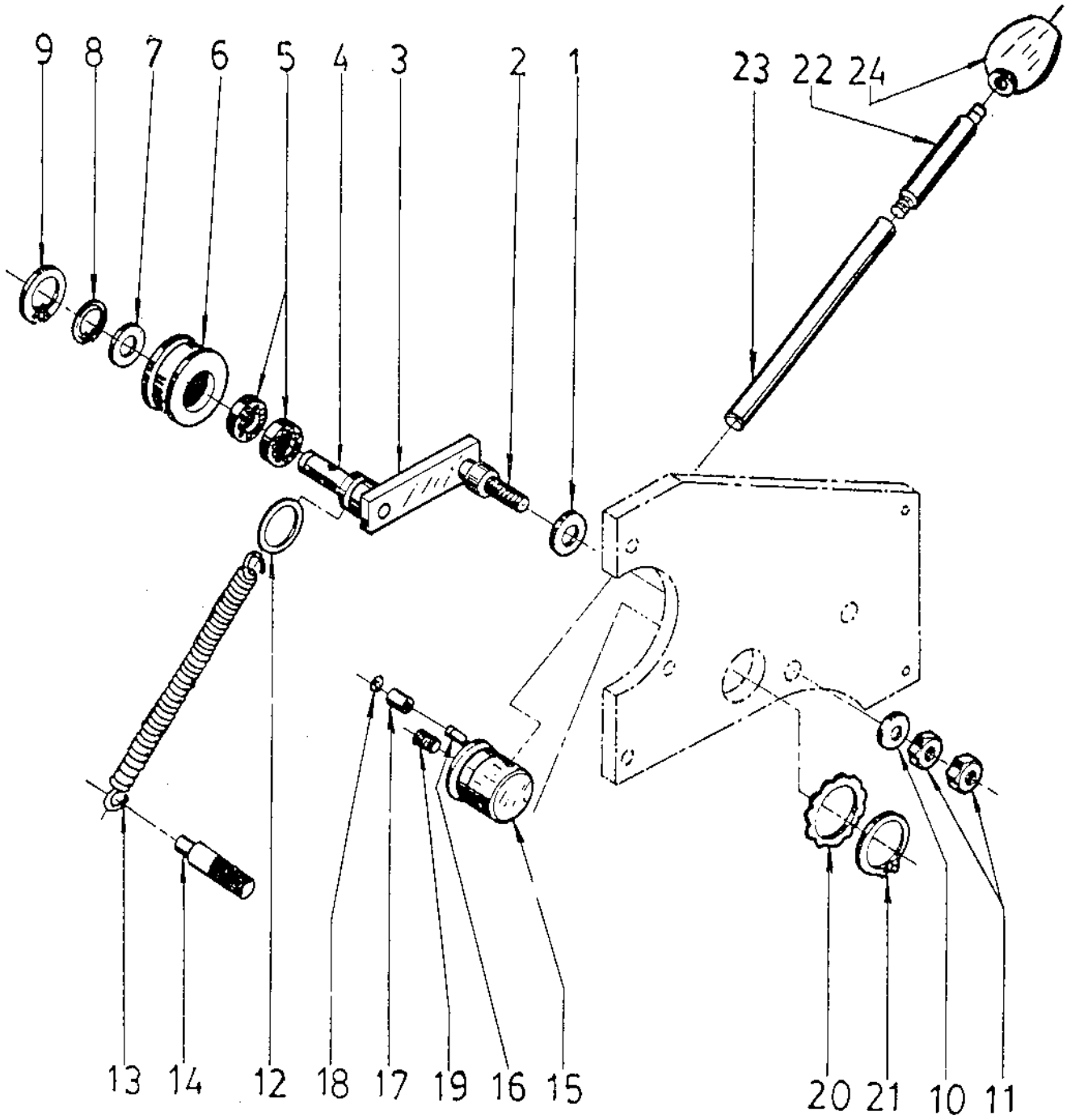
Drive Assembly



Drive Assembly

| | | | | |
|-------|----------------|--|-------|---|
| ..... | BD920N-3J.B.S. | 4" 3-Jaw Chuck w/Backplate (not shown) | | 1 |
| ..... | BD920N-CJ3 | Chuck Jaw Set (not shown) | | 1 |
| ..... | BD920N-ST | Spanner Tool for Chuck (not shown) | | 1 |
| ..... | FJ1001 | 4 Jaw Chuck 1-1/2 x 7 (not shown) | | 1 |
| ..... | FJ1002 | 1-1/2 x 8 Backplate (not shown) | | 1 |
| ..... | FJ1003 | Face Plate 1-1/2 x 8 (not shown) | | 1 |
| ..... | FJ1004 | Spindle w/1-1/2 x 8 TPI (not shown) | | 1 |
| 1 | 1044 | Bracket Plate | | 1 |
| 2 | TS-1504041 | Hex Socket Cap Screw | M8x20 | 2 |
| 3 | 1026 | Belt Pulley Shaft | | 1 |
| 4 | TS-1550071 | Washer | M10 | 1 |
| 5 | TS-1551071 | Lock Washer | M10 | 1 |
| 6 | TS-1540071 | Hex Nut | M10 | 1 |
| 7 | 1031 | Bushing | | 2 |
| 8 | BD920N-D08 | Snap Ring | 25 | 1 |
| 9 | 1027 | Washer | | 1 |
| 10 | 1025 | Spring | | 5 |
| 11 | BD920N-D11 | Ball | 5 | 5 |
| 12 | 1024 | Pulley | | 1 |
| 13 | 1029 | Pulley | | 1 |
| 14 | 1028 | Washer | | 1 |
| 15 | BD920N-D15 | Snap Ring | 12 | 1 |
| 16 | BD920N-D16 | Oil Port | 6 | 1 |
| 17 | 1021 | Spacer | | 1 |
| 18 | 1023 | Collar | | 1 |
| 19 | 1020 | Motor Pulley | | 1 |
| 20 | 1022 | Washer | | 1 |
| 21 | TS-1551041 | Lock Washer | M6 | 1 |
| 22 | TS-1514031 | Hex Socket Cap Screw | M6x20 | 1 |
| 23 | 1049 | Cover Plate | | 1 |
| 24 | TS-1501021 | Hex Socket Cap Screw | M4x8 | 2 |
| 25 | TS-1550021 | Washer | M4 | 3 |
| 26 | TS-1501021 | Hex Socket Cap Screw | M4x8 | 1 |
| 27 | 1045 | Cover w/ Hinge | | 1 |
| 28 | TS-1504031 | Hex Socket Cap Screw | M4x6 | 4 |
| 29 | TS-1500041 | Washer | M6 | 2 |
| 30 | TS-1503051 | Hex Socket Cap Screw | M6x20 | 2 |
| 31 | TS-1503061 | Hex Socket Cap Screw | M6x25 | 1 |
| 32 | TS-1550041 | Washer | M6 | 1 |
| 33 | 1048 | Spring | | 1 |
| 34 | TS-1503061 | Hex Socket Cap Screw | M6x25 | 2 |
| 35 | 1047 | Clamp Block | | 1 |
| 36 | BD920N-D36 | Thread Label | | 1 |
| 37 | VB-5M710 | V-Belt | | 1 |
| 38 | VB-170xL050 | Cog Belt | | 1 |
| 39 | 1001 | Plate | | 1 |
| 40 | TS-1551061 | Lock Washer | M8 | 2 |
| 41 | TS-1550051 | Washer | M8 | 2 |

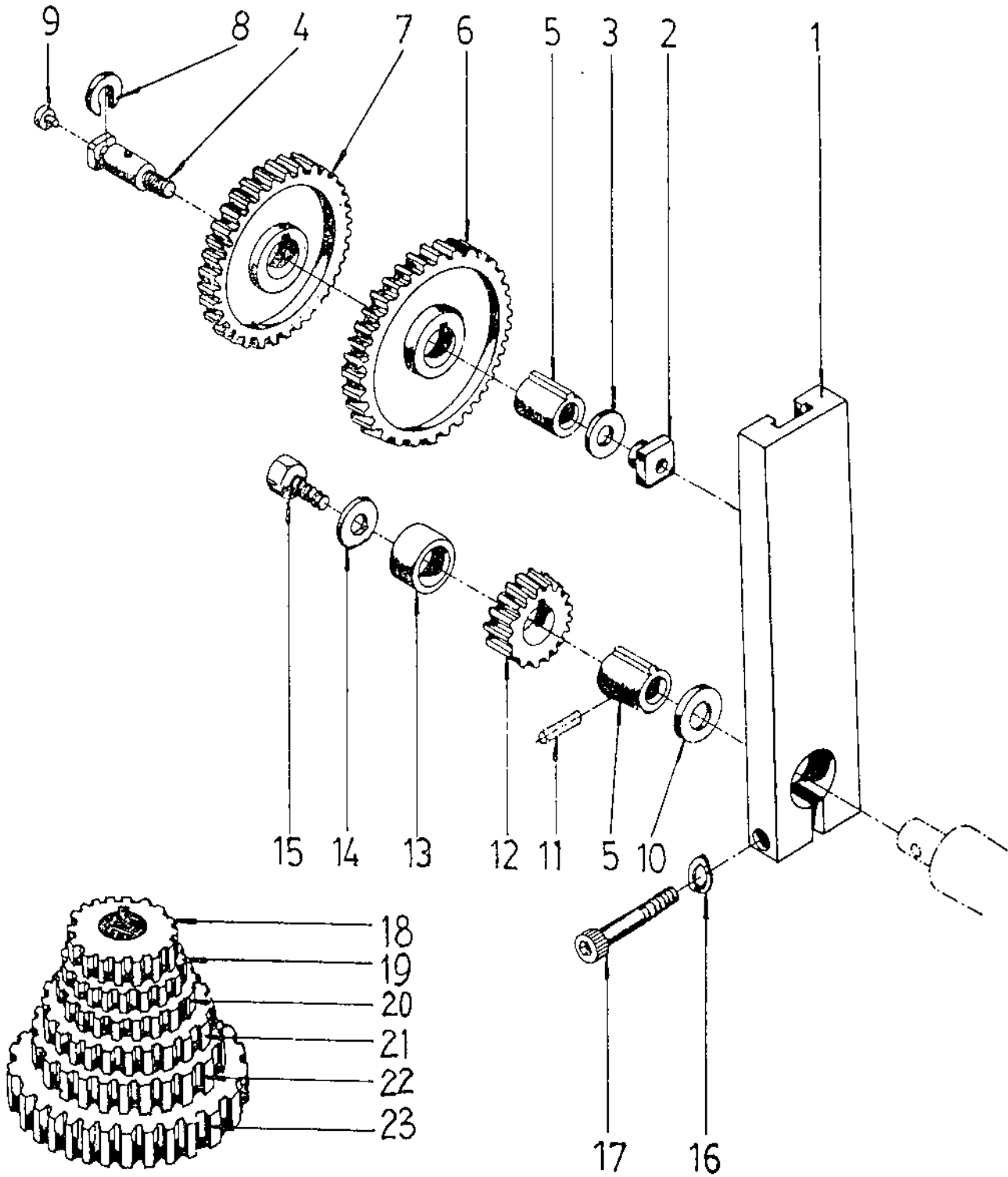
Tension Roller Assembly



Tension Roller Assembly

| | | | | |
|----|-------------|---------------|--------|---|
| 1 | 1040N | Washer | M12 | 1 |
| 2 | 1035 | Stud Bolt | | 1 |
| 3 | 1035-1 | Lever Bracket | | 1 |
| 4 | 1035-2 | Lever | | 1 |
| 5 | BD920N-TR05 | Ball Bearing | | 2 |
| 6 | 1039 | Roller | | 1 |
| 7 | 1038 | Washer | | 1 |
| 8 | BD920N-TR08 | Snap Ring | 12 | 1 |
| 9 | BD920N-TR09 | Snap Ring | 28 | 1 |
| 10 | TS-1550071 | Washer | M10 | 1 |
| 11 | TS-1540071 | Nut | M10 | 2 |
| 12 | 1036 | Washer | | 1 |
| 13 | 1037 | Spring | | 1 |
| 14 | 1050 | Stud Bolt | | 1 |
| 15 | 1032 | Toggle | | 1 |
| 16 | 1051 | Pin | | 1 |
| 17 | 1033 | Sleeve | | 1 |
| 18 | BD920N-TR18 | Snap Ring | 6 | 1 |
| 19 | TS-1524031 | Set Screw | M8x12 | 1 |
| 20 | 1034 | Wave Washer | | 1 |
| 21 | BD920N-TR21 | Snap Ring | 34 | 1 |
| 22 | 1042 | Lever | | 1 |
| 23 | 1043 | Lever | | 1 |
| 24 | 1044A | Knob | M10x32 | 1 |

Quadrant Assembly

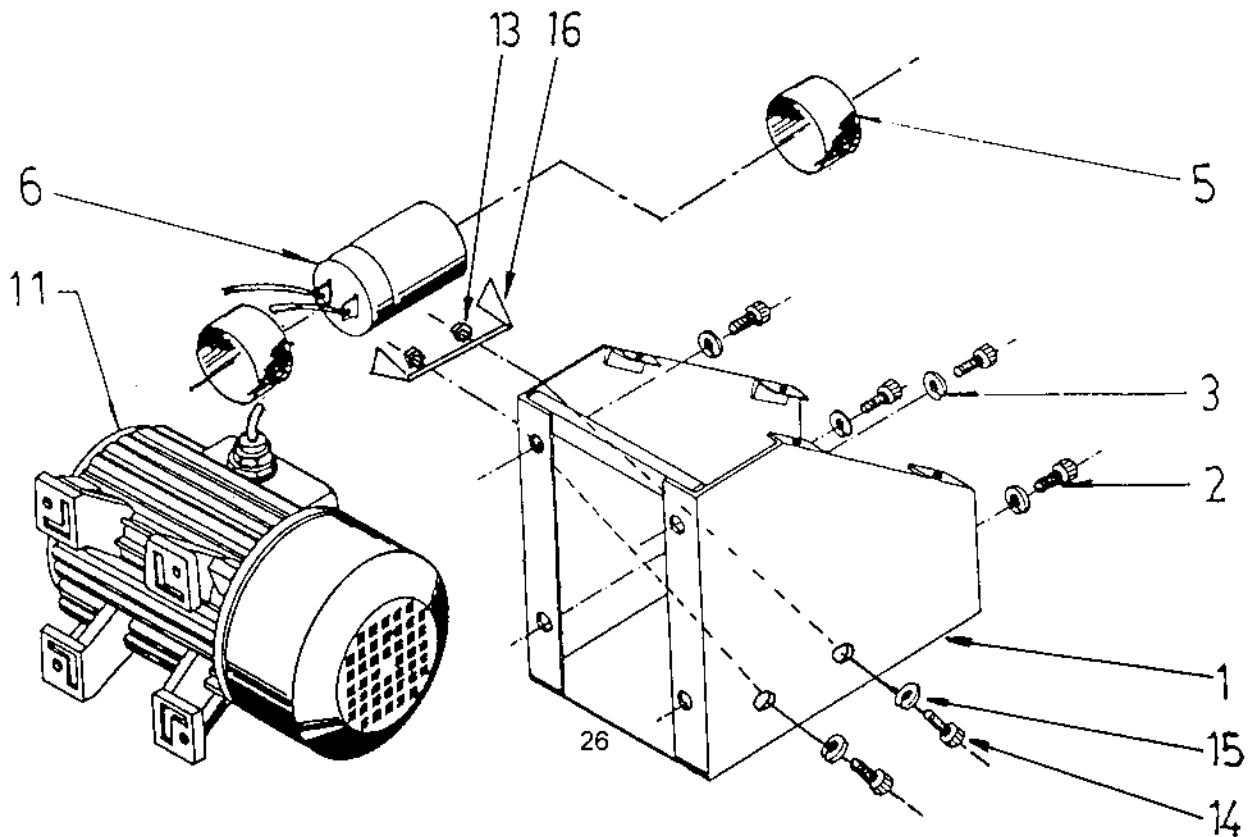
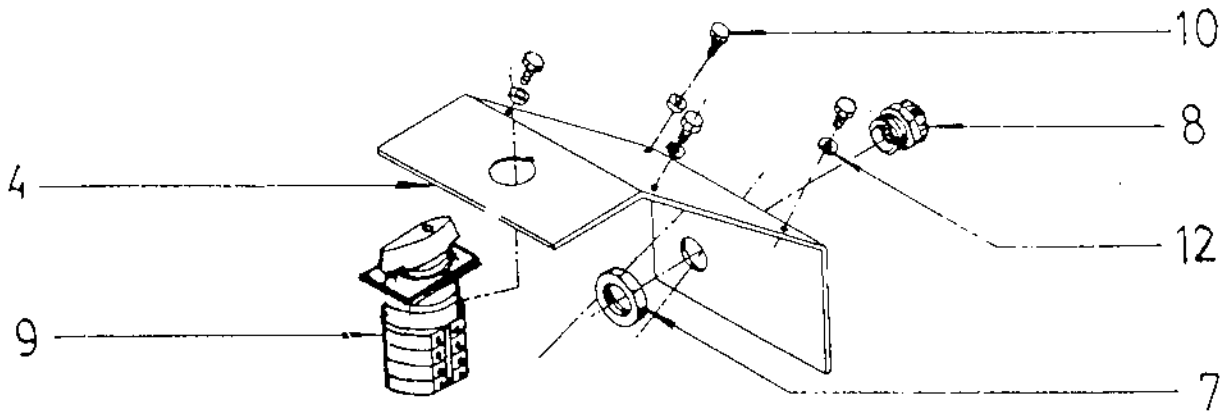


Quadrant Assembly

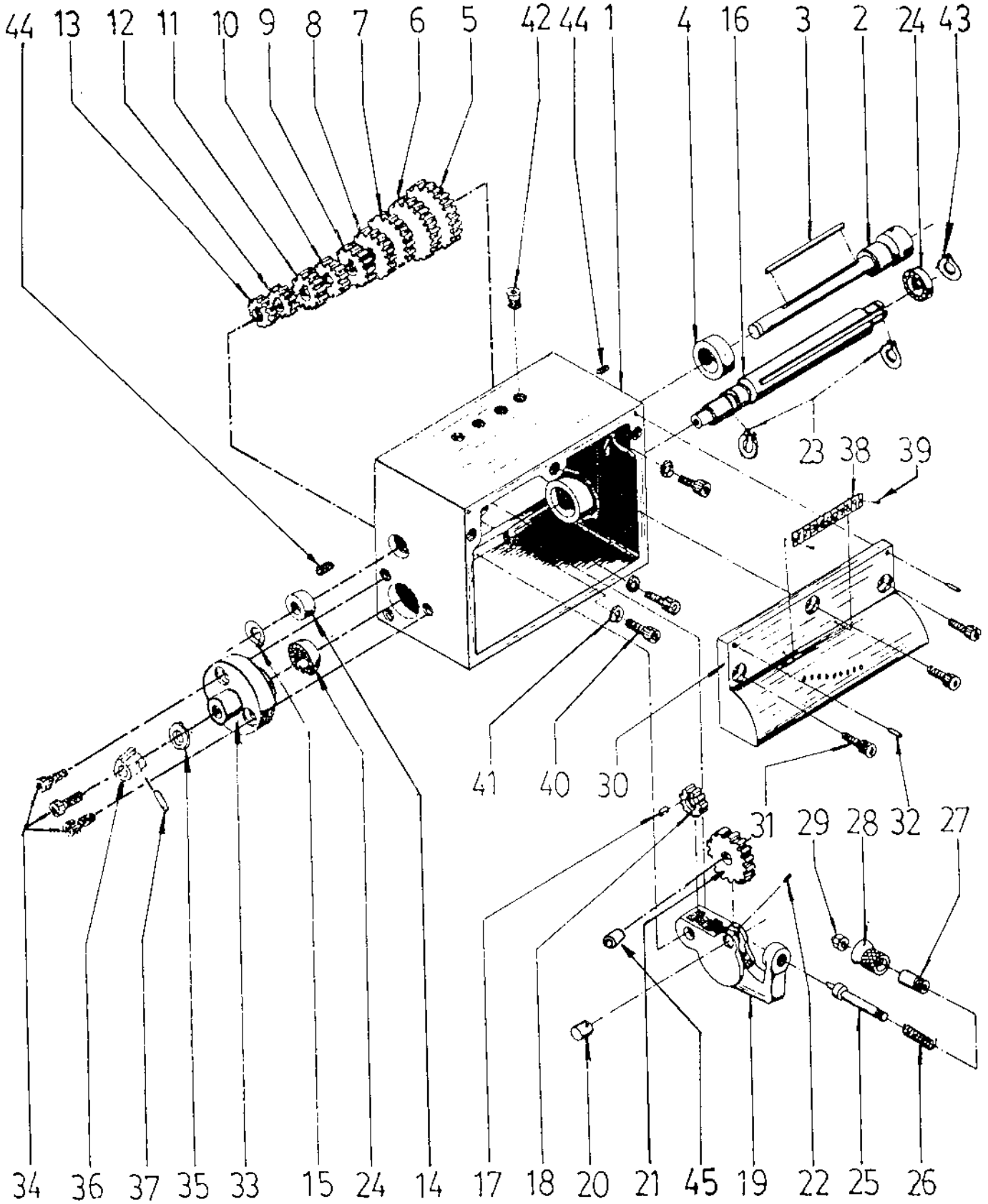
| | | | | |
|---------|-----------------|---------------------------|------------|---|
| 1..... | 2003..... | Bracket..... | ..... | 1 |
| 2..... | 2004..... | T-Nut..... | ..... | 1 |
| 3..... | TS-1550041..... | Washer..... | M6..... | 1 |
| 4..... | 2005..... | Shaft..... | ..... | 1 |
| 5..... | 2009..... | Bushing..... | ..... | 2 |
| 6..... | 2001..... | Gear..... | 127T..... | 1 |
| 7..... | 2002..... | Gear..... | 120T..... | 1 |
| 8..... | 2006..... | Washer..... | ..... | 1 |
| 9..... | BD920N-Q09..... | Oil Port..... | 6..... | 1 |
| 10..... | TS-1550071..... | Washer..... | M10..... | 1 |
| 11..... | BD920N-Q11..... | Pin..... | 4x12..... | 1 |
| 12..... | 2007..... | Gear..... | 30T..... | 1 |
| 13..... | 2008..... | Spacing Ring..... | ..... | 1 |
| 14..... | TS-1550041..... | Washer..... | M6..... | 1 |
| 15..... | TS-1503011..... | Hex Socket Cap Screw..... | M6x8..... | 1 |
| 16..... | TS-1551041..... | Lock Washer..... | M6..... | 1 |
| 17..... | TS-1503091..... | Hex Socket Cap Screw..... | M6x40..... | 1 |
| 18..... | 2010..... | Gear..... | 28T..... | 1 |
| 19..... | 2011..... | Gear..... | 36T..... | 1 |
| 20..... | 2012..... | Gear..... | 42T..... | 1 |
| 21..... | 2013..... | Gear..... | 45T..... | 1 |
| 22..... | 2014..... | Gear..... | 60T..... | 1 |
| 23..... | 2015..... | Gear..... | 80T..... | 1 |

Electrical Assembly

| | | | |
|---------|-------------------|---|---------|
| 1..... | 10002..... | Housing..... | 1 |
| 2..... | BD920N-E02..... | Screw..... | M6x12 4 |
| 3..... | BD920N-E03..... | Lock Washer..... | M6 4 |
| 4..... | 10001..... | Cover..... | 1 |
| 5..... | BD920N-E05..... | Condenser Clip..... | 2 |
| 6..... | BD920N-E06..... | Condenser..... | 1 |
| 7..... | BD920N-E07..... | Lock Nut..... | 1 |
| 8..... | BD920N-E08..... | Screw Coupling..... | 1 |
| 9..... | BD920N-E09..... | Switch..... | 1 |
| 10..... | BD920N-E10..... | Hex Screw..... | M5x10 4 |
| 11..... | BD920N-E11..... | Motor..... | 1 |
| | BD920N-E11-1..... | Motor Junction Box Cover (not shown)..... | 1 |
| 12..... | TS-1551031..... | Lock Washer..... | M5 4 |
| 13..... | TS-1540031..... | Nut..... | M5 2 |
| 14..... | TS-1502021..... | Hex Socket Cap Screw..... | M5x10 2 |
| 15..... | TS-1550031..... | Washer..... | M5 1 |
| 16..... | BD920N-E16..... | Capacitor Support..... | 1 |



Gear Box Assembly



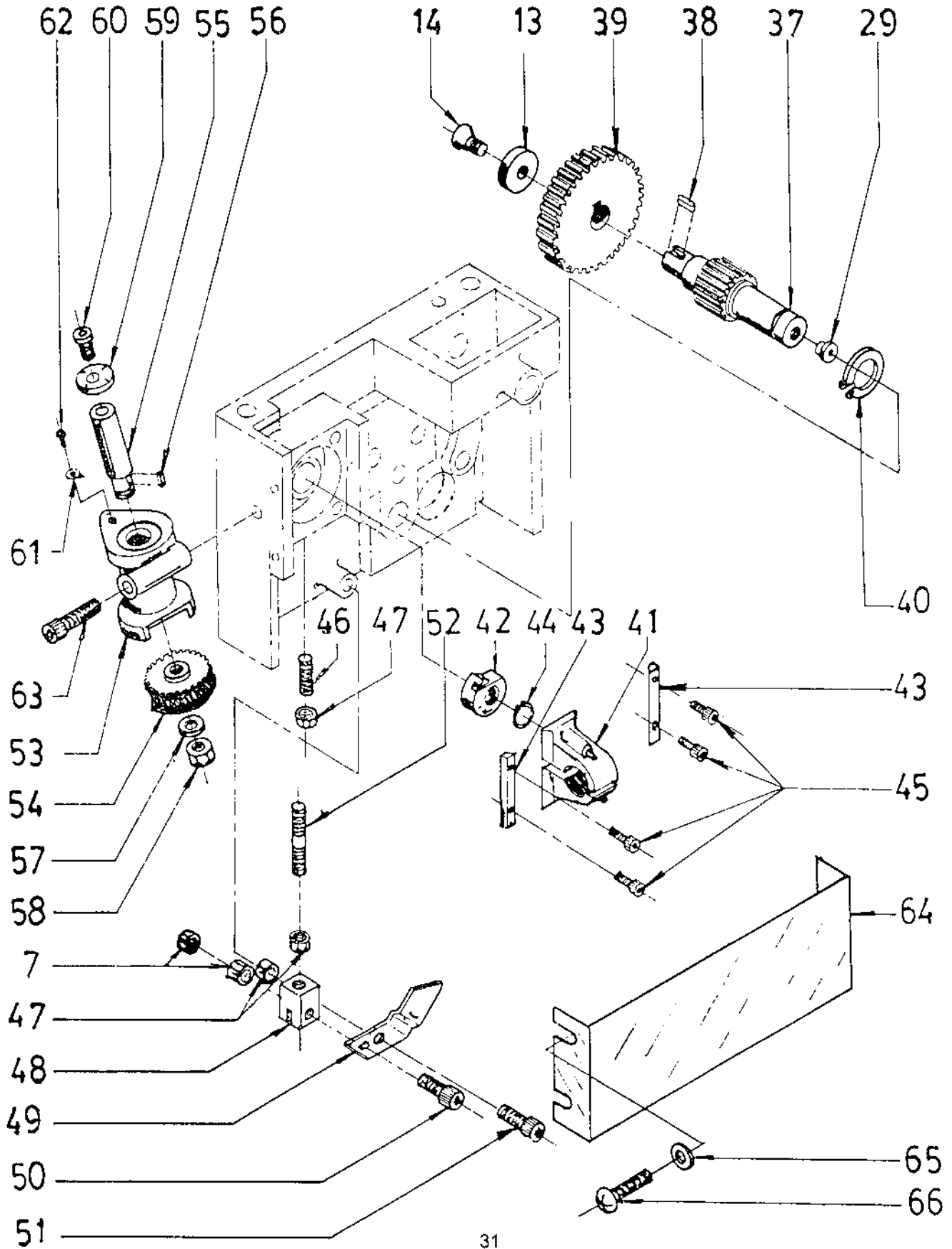
Gear Box Assembly

| | | | | |
|----|-------------|----------------------|-------|---|
| 1 | 3001 | Gear Box Casting | | 1 |
| 2 | 3009 | Shaft | | 1 |
| 3 | BD920N-GB03 | Key | 5x69 | 1 |
| 4 | 3019 | Bushing | | 1 |
| 5 | 3018 | Gear | 28T | 1 |
| 6 | 3017 | Gear | 26T | 1 |
| 7 | 3016 | Gear | 24T | 1 |
| 8 | 3015 | Gear | 23T | 1 |
| 9 | 3014 | Gear | 22T | 1 |
| 10 | 3013 | Gear | 20T | 1 |
| 11 | 3012 | Gear | 19T | 1 |
| 12 | 3011 | Gear | 18T | 1 |
| 13 | 3010 | Gear | 16T | 1 |
| 14 | 3025 | Bushing | | 1 |
| 15 | BD920N-GB15 | Snap Ring | 16 | 1 |
| 16 | 3020 | Shaft | | 1 |
| 17 | BD920N-GB17 | Key | 5x12 | 1 |
| 18 | 3021 | Gear | 16T | 1 |
| 19 | 3002 | Shift Arm | | 1 |
| 20 | 3007 | Shaft | | 1 |
| 21 | 3023 | Gear | | 1 |
| 22 | TS-1522031 | Set Screw | 36T | 1 |
| 23 | BD920N-GB23 | Snap Ring | M5x10 | 1 |
| 24 | 6202ZZ | Ball Bearing | 15 | 2 |
| 25 | 3004 | Plunger | | 2 |
| 26 | 3005 | Spring | | 1 |
| 27 | 3003 | Bushing | | 1 |
| 28 | 3006 | Handle | | 1 |
| 29 | BD920N-GB29 | Cap Nut | M6 | 1 |
| 30 | 3008 | Front Cover | | 1 |
| 31 | TS-1503041 | Hex Socket Cap Screw | | 1 |
| 32 | BD920N-GB32 | Pin | M6x16 | 3 |
| 33 | 3022 | Bracket | 4x20 | 2 |
| 34 | TS-1503021 | Hex Socket Cap Screw | | 1 |
| 35 | TS-1550071 | Washer | M6x10 | 3 |
| 36 | 2009 | Bushing | M10 | 1 |
| 37 | BD920N-GB37 | Pin | | 1 |
| 38 | 3026 | Plate | 4x14 | 1 |
| 39 | BD920N-GB38 | Rivet | | 1 |
| 40 | TS-1504041 | Hex Socket Cap Screw | 2x5 | 2 |
| 41 | TS-1551081 | Lock Washer | M8x20 | 3 |
| 42 | BD920N-GB42 | Oil Cup | M8 | 3 |
| 43 | BD920N-GB43 | Snap Ring | M6 | 4 |
| 44 | TS-1522011 | Set Screw | 35 | 1 |
| 45 | BD920N-GB45 | Bushing | M5x6 | 2 |
| | BD920N-SP | Shear Pin | | 1 |

Apron Assembly

| | | | | |
|----|------------|----------------------|-------|---|
| 1 | 4006 | Apron Casting | | 1 |
| 2 | 4034 | Bracket | | 1 |
| 3 | 4033 | Worm | | 1 |
| 4 | BD920N-A04 | Key | | 1 |
| 5 | TS-1503061 | Hex Socket Cap Screw | M6x25 | 3 |
| 6 | 7003 | Feed Screw | | 1 |
| 7 | TS-1540021 | Nut | | 2 |
| 8 | TS-1521051 | Set Screw | M4x12 | 2 |
| 9 | BD920N-A09 | Steel Ball | 4.5 | 1 |
| 10 | 4021 | Spring | | 1 |
| 11 | 4022 | Handle | | 1 |
| 12 | TS-1523011 | Set Screw | M6x6 | 1 |
| 13 | 4005 | Washer | | 3 |
| 14 | BD920N-A14 | Flat Head Screw | M6x8 | 3 |
| 15 | 4008 | Gear | 12T | 1 |
| 16 | BD920N-A16 | Spring Pin | 4x30 | 1 |
| 17 | 4007 | Gear | 43T | 1 |
| 18 | 4015 | Handle | | 1 |
| 19 | 4014 | Gear | 13T | 1 |
| 20 | 4013 | Bracket | | 1 |
| 21 | 4025 | Spring | | 1 |
| 22 | TS-1521041 | Set Screw | M4x10 | 1 |
| 23 | TS-1503071 | Hex Socket Cap Screw | M6x30 | 2 |
| 24 | 4011 | Gear | 43T | 1 |
| 25 | 4009 | Shaft | | 1 |
| 26 | BD920N-A26 | Key | 4x6 | 1 |
| 27 | 4010 | Gear | 41T | 1 |
| 28 | BD920N-A28 | Ring | 14 | 1 |
| 29 | BD920N-A29 | Oil Port | 8 | 2 |
| 30 | 4004 | Gear | 17T | 1 |
| 31 | 4003 | Hand Wheel | | 1 |
| 32 | BD920N-A32 | Spring Pin | 4x25 | 1 |
| 33 | 4002 | Screw | | 1 |
| 34 | 4001 | Handle | | 1 |
| 35 | 4018 | Label | | 1 |
| 36 | BD920N-A36 | Rivet | 2X3 | 4 |

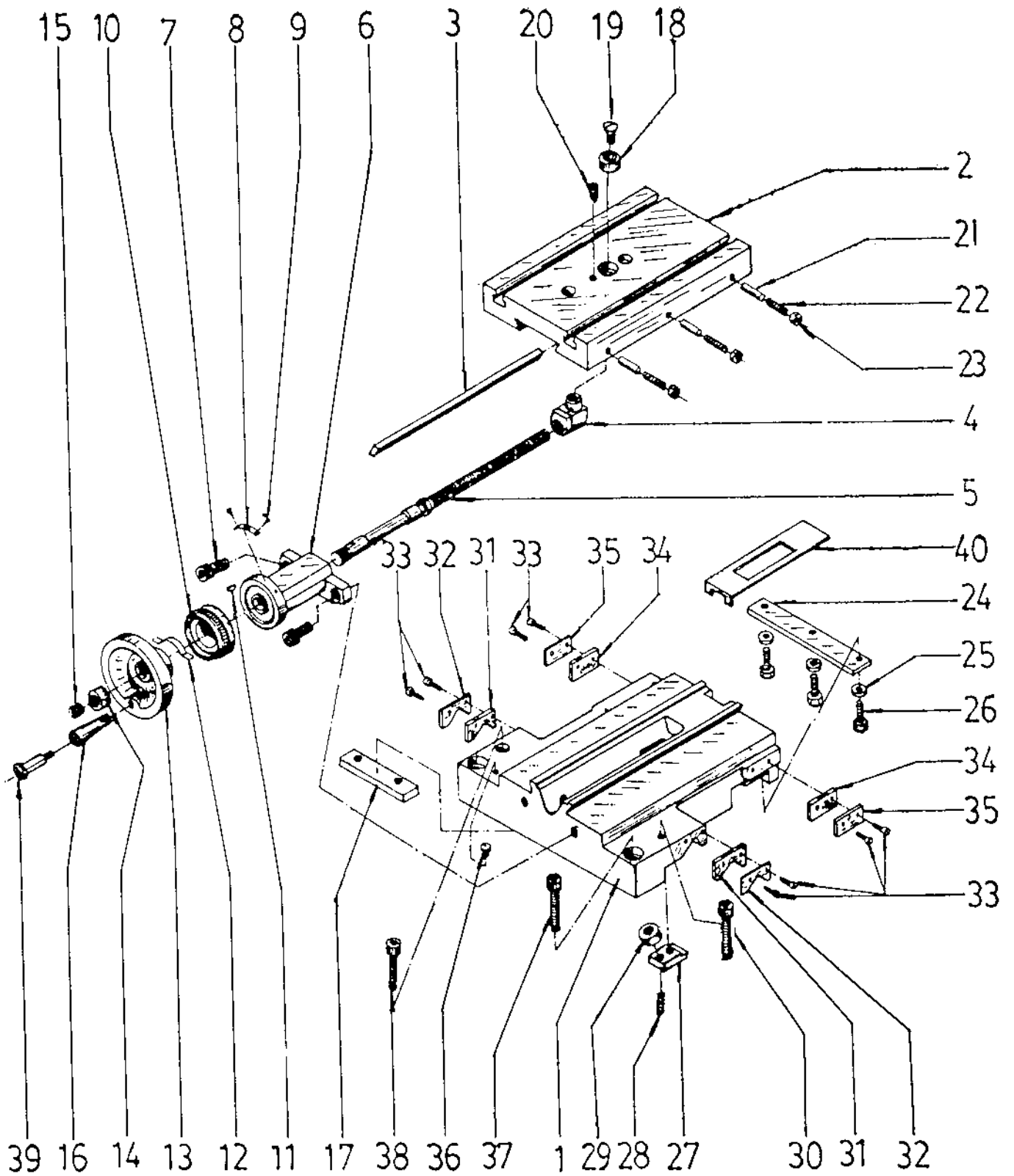
Apron Assembly (cont'd)



Apron Assembly (continued)

| | | | | |
|---------|-----------------|-----------------------------|------------|---|
| 37..... | 4016..... | Gear..... | 18T..... | 1 |
| 38..... | BD920N-A38..... | Key..... | 4x10..... | 1 |
| 39..... | 4012..... | Worm Gear..... | 42T..... | 1 |
| 40..... | BD920N-A40..... | Ring..... | 12..... | 1 |
| 41..... | 4017..... | Half Nut..... | | 1 |
| 42..... | 4019..... | Locking Cam..... | | 1 |
| 43..... | 4020..... | Guide..... | | 2 |
| 44..... | BD920N-A44..... | Ring..... | 8..... | 1 |
| 45..... | TS-1501051..... | Hex Socket Cap Screw..... | M4x16..... | 4 |
| 46..... | BD920N-A46..... | Set Screw..... | M5x25..... | 1 |
| 47..... | TS-1540031..... | Hex Nut..... | M5..... | 3 |
| 48..... | 4030..... | Control Block..... | | 1 |
| 49..... | 4032..... | Joint Plate..... | | 1 |
| 50..... | TS-1501061..... | Hex Socket Cap Screw..... | M4x20..... | 1 |
| 51..... | TS-1502041..... | Hex Socket Cap Screw..... | M5x16..... | 1 |
| 52..... | 4031..... | Screw..... | | 1 |
| 53..... | 4036..... | Thread Dial Body..... | | 1 |
| 54..... | 4029..... | Worm Gear..... | 64T..... | 1 |
| 55..... | 4028..... | Shaft..... | | 1 |
| 56..... | BD920N-A56..... | Key..... | 3x10..... | 1 |
| 57..... | TS-1550061..... | Lock Washer..... | M8..... | 1 |
| 58..... | TS-1540061..... | Hex Nut..... | M8..... | 1 |
| 59..... | 4027..... | Dial..... | | 1 |
| 60..... | TS-1503011..... | Hex Socket Cap Screw..... | M6x8..... | 1 |
| 61..... | 4024..... | Pointer..... | | 1 |
| 62..... | BD920N-A62..... | Rivet..... | 2x3..... | 1 |
| 63..... | TS-1503131..... | Hex Socket Cap Screw..... | M6x60..... | 1 |
| 64..... | 4023..... | Apron Cover..... | | 1 |
| 65..... | TS-1550021..... | Washer..... | M4..... | 4 |
| 66..... | TS-1532021..... | Pan Head Machine Screw..... | M4x8..... | 4 |

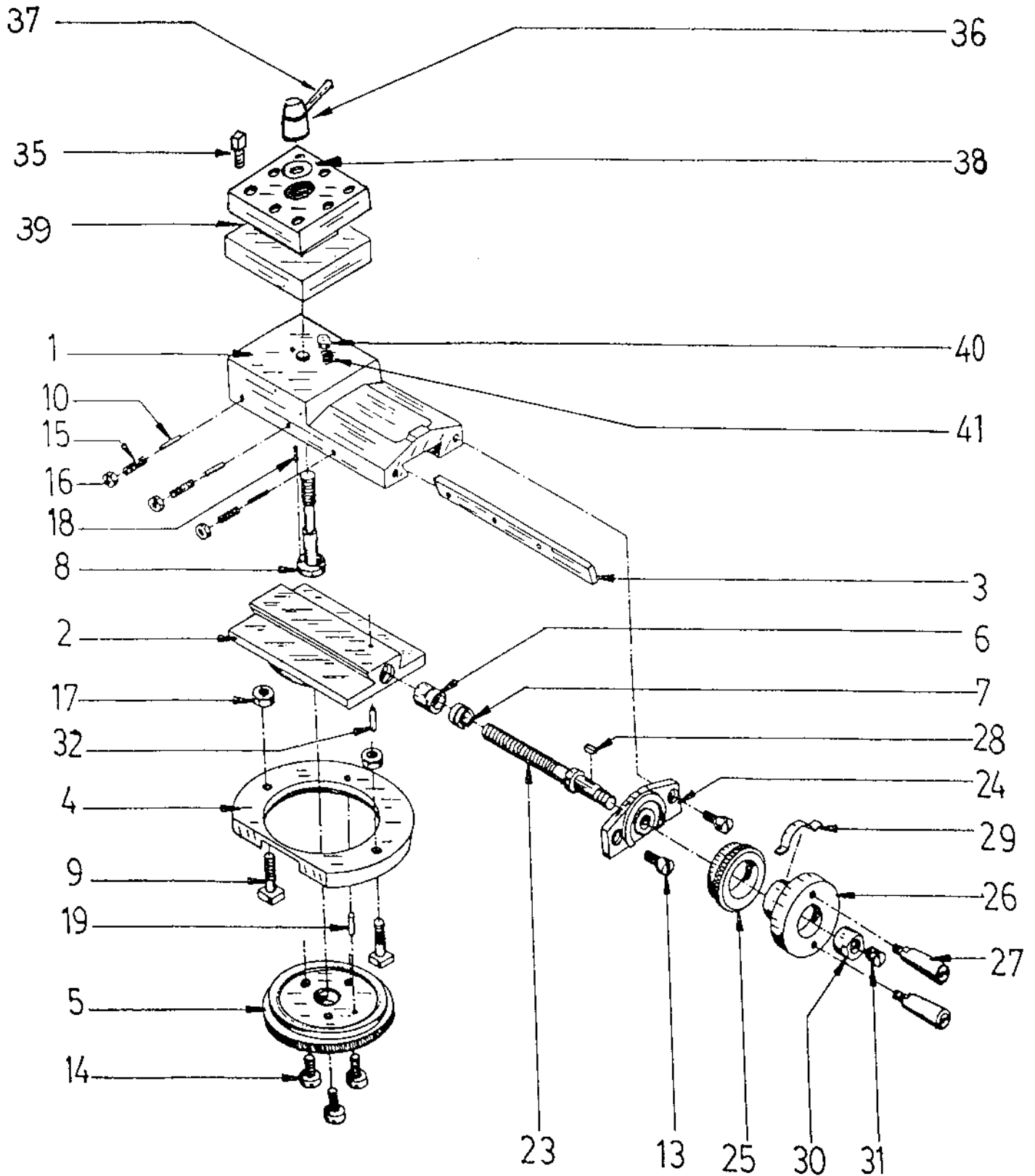
Saddle and Cross Slide Assembly



Saddle and Cross Slide Assembly

| | | | | |
|----|-------------|----------------------|-------|---|
| 1 | 5005 | Saddle | | 1 |
| 2 | 5006 | Cross Slide | | 1 |
| 3 | 5002 | Gib | | 1 |
| 4 | 5036 | Nut | | 1 |
| 5 | 5018 | Lead Screw | | 1 |
| 6 | 5019 | Bracket | | 1 |
| 7 | TS-1503031 | Hex Socket Cap Screw | M6x12 | 2 |
| 8 | 5026 | Plate | | 1 |
| 9 | BD920N-CS09 | Rivet | 2x5 | 2 |
| 10 | 5020 | Graduated Ring | | 1 |
| 11 | BD920N-CS11 | Key | 3x13 | 1 |
| 12 | 5023 | Spring | | 1 |
| 13 | 5021 | Hand Wheel | | 1 |
| 14 | 5022 | Hex Nut | | 1 |
| 15 | BD920N-CS15 | Set Screw | M8x6 | 1 |
| 16 | 5025 | Handle | | 1 |
| 17 | 5003 | Slide Block | | 1 |
| 18 | 5037 | Bushing | | 1 |
| 19 | TS-1534041 | Flat Head Screw | M6x12 | 1 |
| 20 | TS-1523021 | Set Screw | M6x8 | 1 |
| 21 | 5001 | Pin | | 3 |
| 22 | TS-1521041 | Set Screw | M4x10 | 3 |
| 23 | TS-1540021 | Nut | M4 | 3 |
| 24 | 5016 | Slide Block | | 1 |
| 25 | TS-1550041 | Washer | M6 | 3 |
| 26 | TS-1503041 | Hex Socket Cap Screw | M6x16 | 3 |
| 27 | 5017 | Clip | | 1 |
| 28 | TS-1523061 | Set Screw | M6x20 | 1 |
| 29 | TS-1540041 | Nut | M6 | 1 |
| 30 | TS-1503061 | Hex Socket Cap Screw | M6x25 | 1 |
| 31 | 5042 | Way Cover | | 2 |
| 32 | 5041 | Cover Mount | | 2 |
| 33 | TS-1532012 | Pan Head Screw | M4x6 | 8 |
| 34 | 5040 | Way Cover | | 2 |
| 35 | 5039 | Cover Mount | | 2 |
| 36 | BD920N-CS36 | Oil Port | 8 | 1 |
| 37 | TS-1504061 | Hex Socket Cap Screw | M8x30 | 2 |
| 38 | TS-1503061 | Hex Socket Cap Screw | M6x25 | 2 |
| 39 | 5024 | Handle Screw | | 1 |
| 40 | 5038 | Cover Mount | | 1 |

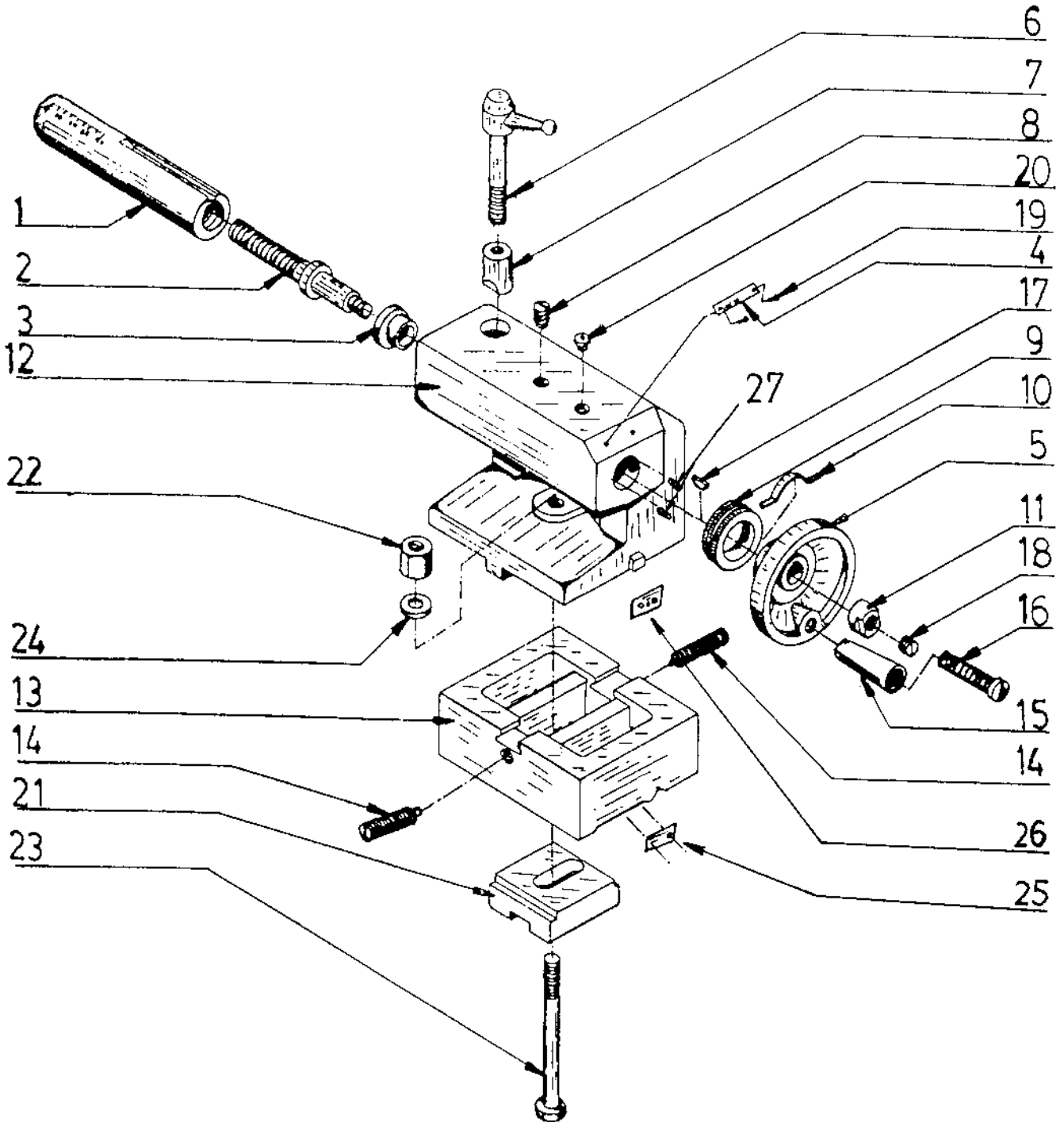
Top Slide Assembly



Top Slide Assembly

| | | | | |
|---------|---|---|------------|---|
| ..... | BD920N-TSA..... | Top Slide Assembly without Tool Post..... | | |
| ..... | BD920N-TP | Four Way Tool Post Complete..... | | |
| 1..... | 5011..... | Longitudinal Slide..... | | 1 |
| 2..... | 5010..... | Swivel Base..... | | 1 |
| 3..... | 5028..... | Gib..... | | 1 |
| 4..... | 5008..... | Clamping Ring..... | | 1 |
| 5..... | 5009..... | Micrometer Pan..... | | 1 |
| 6..... | 5013..... | Lead Screw Nut..... | | 1 |
| 7..... | 5014..... | Adjusting Screw..... | | 1 |
| 8..... | 5033..... | Screw..... | | 1 |
| 9..... | 5007..... | T-Screw..... | | 2 |
| 10..... | 5027..... | Pin..... | | 3 |
| 13..... | TS-1502021..... | Hex Socket Cap Screw..... | M5x10..... | 2 |
| 14..... | BD920N-TS14..... | Flat Head Screw..... | M6x12..... | 3 |
| 15..... | TS-1521041..... | Set Screw..... | M4x10..... | 3 |
| 16..... | TS-1540021..... | Nut..... | M4..... | 3 |
| 17..... | TS-1540041..... | Nut..... | M6..... | 2 |
| 18..... | BD920N-TS18..... | Lock Pin..... | 3x8..... | 1 |
| 19..... | BD920N-TS19..... | Lock Pin..... | 3x14..... | 1 |
| 23..... | 5012..... | Lead Screw..... | | 1 |
| 24..... | 5043..... | Lead Screw Mount..... | | 1 |
| 25..... | 5004..... | Micrometer Collar..... | | 1 |
| 26..... | 5031..... | Handwheel..... | | 1 |
| 27..... | 5015..... | Handle..... | | 2 |
| 28..... | BD920N-TS28..... | Key..... | 3x13..... | 1 |
| 29..... | 5023..... | Feed Spring..... | | 1 |
| 30..... | 5022..... | Nut..... | | 1 |
| 31..... | BD920N-TS31..... | Set Screw..... | M8x6..... | 1 |
| 32..... | BD920N-TS32..... | Lock Pin..... | 3x12..... | 1 |
| 35..... | BD920N-TS35..... | Bolt..... | M8x35..... | 8 |
| 36..... | BD920N-H.S..... | Handle Seat..... | | 1 |
| 37..... | BD920N-H.S..... | Handle..... | | 1 |
| 38..... | BD920N-TS38..... | Washer..... | | 1 |
| 39..... | BD920N-TS39..... | 4 Way Tool Post..... | | 1 |
| 40..... | BD920N-TS40..... | Pin..... | | 1 |
| 41..... | BD920N-TS41..... | Spring..... | | 1 |
| | (See below: optional for single tool post assembly (Not shown)) | | | |
| 11..... | 5032..... | Nut..... | | 1 |
| 12..... | TS-1490051..... | Hex Cap Bolt..... | M8x30..... | 1 |
| 20..... | 5030..... | Tool Clamp..... | | 1 |
| 21..... | BD920N-TS21..... | Washer..... | 8..... | 1 |
| 22..... | 5034..... | Spring..... | | 1 |
| 33..... | 5029..... | Plate..... | | 1 |
| 34..... | 5035..... | Pin..... | | 1 |

Tailstock Assembly

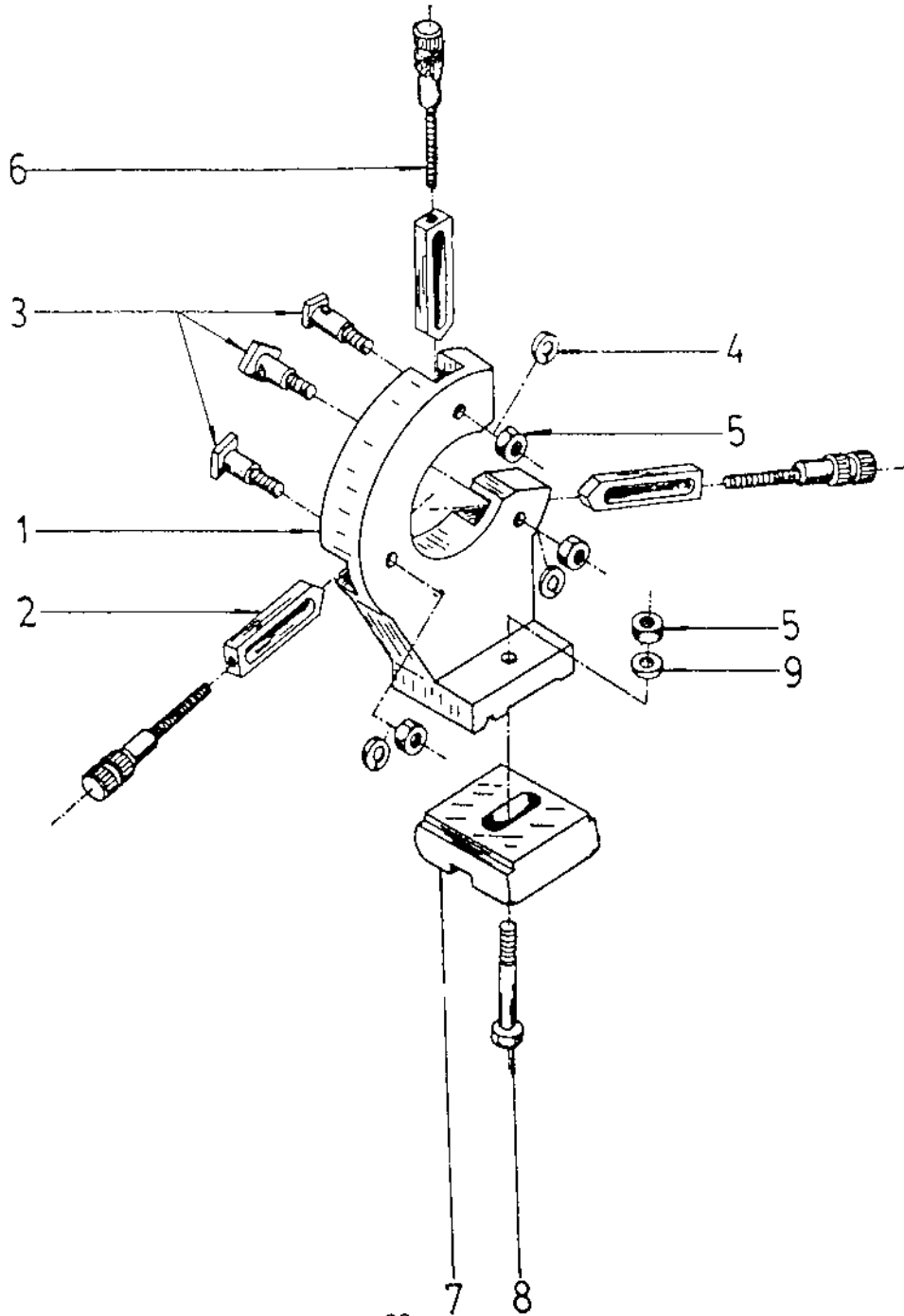


Tailstock Assembly

| | | | | |
|----|------------|--|--------|---|
| 1 | 8009 | Tailstock Ram | | 1 |
| 2 | 8010 | Leadscrew | | 1 |
| 3 | 8011 | Bushing | | 1 |
| 4 | 8012 | Off Set Indicator Plate | | 1 |
| 5 | 8013 | Hand Wheel | | 1 |
| 6 | 8008 | Lever | | 1 |
| 7 | 8001 | Clamp | | 1 |
| 8 | BD920N-T08 | Guide Pin | M5x10 | 1 |
| 9 | 8016 | Micrometer Collar | | 1 |
| 10 | 5023 | Feed Spring | | 1 |
| 11 | 8014 | Nut | | 1 |
| 12 | 8005 | Tailstock Body | | 1 |
| 13 | 8002 | Tailstock Base | | 1 |
| 14 | TS-1524061 | Set Screw | M8x25 | 2 |
| 15 | 4001 | Handle | | 1 |
| 16 | 4002 | Screw | | 1 |
| 17 | BD920N-T17 | Key | 3x13 | 1 |
| 18 | TS-1524011 | Set Screw | M8x8 | 1 |
| 19 | BD920N-T19 | Rivet | 2x5 | 6 |
| 20 | BD920N-T20 | Oil Port | 6 | 1 |
| 21 | 8015 | Clamping Plate | | 1 |
| 22 | 8006 | Nut | M8 | 1 |
| 23 | 8007 | Screw | M8x100 | 1 |
| 24 | TS-1550061 | Washer | M8 | 1 |
| 25 | BD920N-T25 | Label | | 1 |
| 26 | BD920N-T26 | Label | | 1 |
| 27 | BD920N-T27 | Screw | M5x10 | 2 |
| | BD920N-CTA | Complete Tailstock Assembly(not shown) | | 1 |

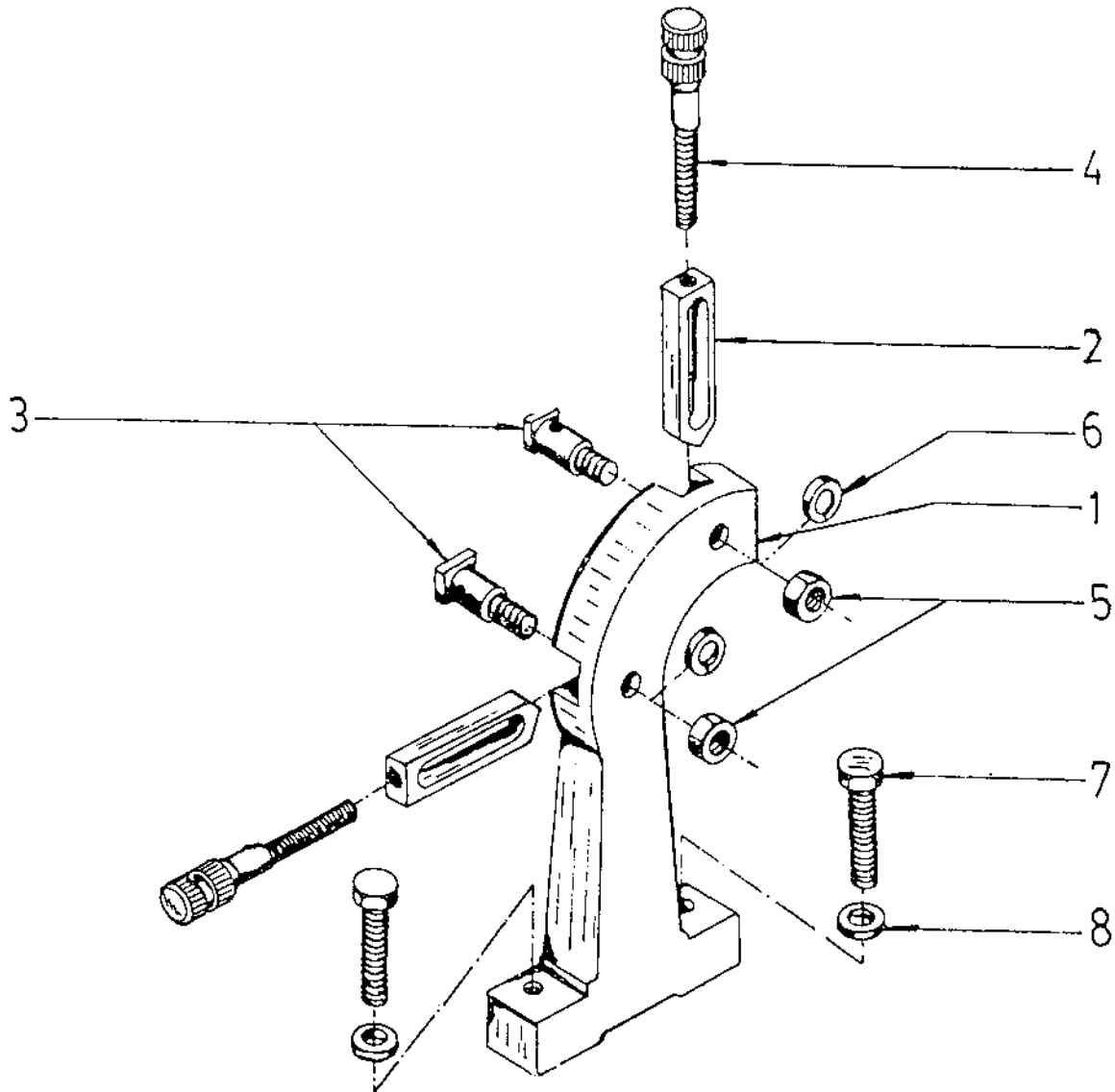
Steady Rest Assembly

| | | | |
|--------|-----------------|---------------------------|------------|
| 1..... | F1001..... | Rest Casting..... | 1 |
| 2..... | F1002..... | Jaw..... | 3 |
| 3..... | F1003..... | Screw..... | 3 |
| 4..... | TS-1551081..... | Lock Washer..... | M8 3 |
| 5..... | TS-1540061..... | Nut..... | M8 3 |
| 6..... | F1004..... | Adjusting Screw..... | 4 |
| 7..... | F1005..... | Clamping Plate..... | 1 |
| 8..... | TS-1490091..... | Hex Cap Bolt..... | M8x50 1 |
| 9..... | TS-1550061..... | Washer..... | M8 1 |
| ..... | BD920N-SR..... | Steady Rest Complete..... | ..... |



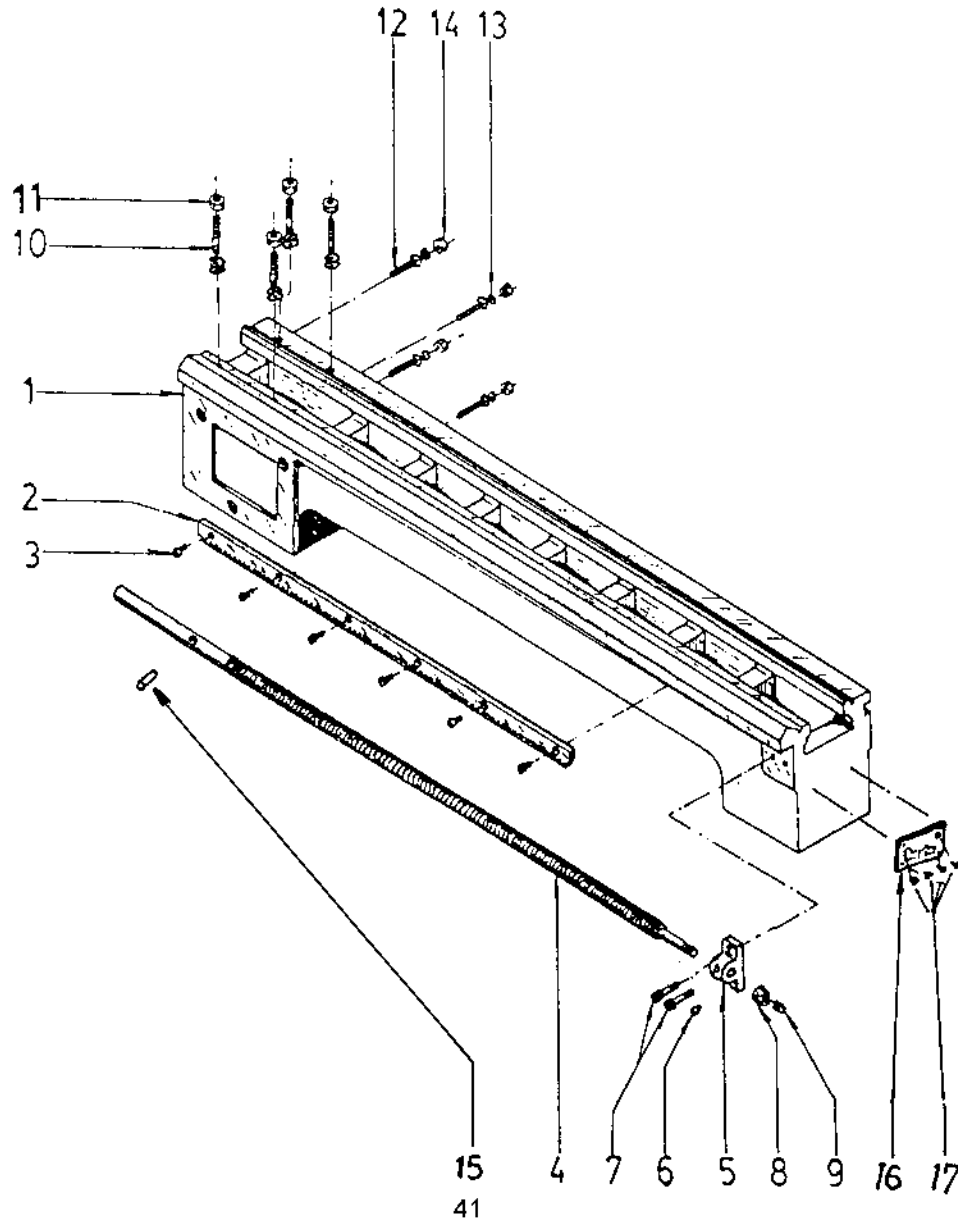
Travel Rest Assembly

| | | | | |
|--------|------------------|---------------------------|-------------|---|
| 1..... | F2001 | Rest Casting..... | 1 | |
| 2..... | F2002 | Jaw | 2 | |
| 3..... | F2003 | Screw | 2 | |
| 4..... | F2004 | Adjusting Screw | 2 | |
| 5..... | TS-1540061 | Hex Nut | M8 | 2 |
| 6..... | TS-1551081 | Lock Washer..... | M8 | 2 |
| 7..... | TS-1503061 | Hex Socket Cap Screw..... | M6x25 | 2 |
| 8..... | TS-1550041 | Washer..... | M6 | 2 |
| ..... | BD920N-FR | Follow Rest Assembly..... | 1 | |



Lathe Bed Assembly

| | | | | |
|----|------------|----------------------|--------|---|
| 1 | 7001 | Bed | | 1 |
| 2 | 7002 | Rack | | 1 |
| 3 | TS-1501021 | Hex Socket Cap Screw | M4x8 | 6 |
| 4 | 7003 | Leadscrew | | 1 |
| 5 | 7004 | Bracket | | 1 |
| 6 | BD920N-B06 | Oil Port | 6 | 1 |
| 7 | TS-1503031 | Hex Socket Cap Screw | M6x12 | 2 |
| 8 | 7006 | Nut | | 1 |
| 9 | BD920N-B09 | Set Screw | M8x8 | 1 |
| 10 | 7005 | Stud | M8x46 | 4 |
| 11 | TS-1540061 | Hex Nut | M8 | 4 |
| 12 | TS-1523081 | Set Screw | M6X30 | 4 |
| 13 | TS-1551041 | Lock Washer | M6 | 4 |
| 14 | TS-1540041 | Hex Nut | M6 | 4 |
| 15 | BD920N-B15 | Pin | § 4x25 | 1 |
| 16 | BD920N-B16 | Label | | 1 |
| 17 | BD920N-B17 | Rivet | | 4 |



Wiring Diagram

Single Phase
115V, 60Hz

